

**PUBLIC ACCOUNTS COMMITTEE  
(1975-76)**

(FIFTH LOK SABHA)

**TWO HUNDRED AND TWENTY-FIRST REPORT**

**COMPUTERISATION IN GOVERNMENT  
DEPARTMENTS**

**DEPARTMENT OF ELECTRONICS**



**LOK SABHA SECRETARIAT  
NEW DELHI**

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- 13-12-1975 (FN)
- 27-4-1976 (AN)

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\*\*Not printed. One cyclostyled copy laid on the Table of the House and five copies placed in the Parliament Library.

## PUBLIC ACCOUNTS COMMITTEE

(1975-76)

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Shri H. N. Mukerjee

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3. Shri Chandulal Chandrakar
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- \*21. Dr. K. Mathew Kurian
22. Shri Rabi Ray

### SECRETARIAT

Shri Avtar Singh Rikhy—*Additional Secretary.*

Shri H. G. Paranjpe—*Chief Financial Committee Officer.*

Shri N. Sunder Rajan—*Senior Financial Committee Officer.*

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\* Ceased to be Members of the Committee w.e.f. 2nd April, 1976, consequent upon their retirement from Rajya Sabha.

## INTRODUCTION

I, the Chairman of the Public Accounts Committee as authorised by the Committee, do present on their behalf this Two Hundred and Twenty First Report on Computerisation in Government Departments.

2. The Public Accounts Committee (1973-74) had examined paragraphs 42 and 43 relating to installation of Computers on Railways included in the Report of the Comptroller and Auditor General of India for the year 1971-72, Union Government (Railways). Their examination of these paragraphs had revealed that the purchase/hire of computers and data processing equipment from IBM had wider ramifications. The transactions for purchase/hire of computers etc., from IBM were not confined to the Railways alone. A number of other departments of Government had also entered into agreements with the IBM, which suffered from certain lacunae and it appeared that IBM had been imposing its own terms and conditions on the Government and other users. A study of the utilization aspect of the computers installed on Railways further revealed that the computers had not been rented out after any detailed analysis of requirements with the result that all the computers were not utilised to the optimum level.

3. The Public Accounts Committee (1973-74) decided, that in view of the very significant information which had come to their notice from the Railways, the entire question of computerisation in Government Departments should be gone into exhaustively. As the matter concerned various Ministries/Departments, detailed questionnaire was issued to collect necessary background material to enable a detailed examination by the Committee. Since the requisite information was not available to the Committee in time, the Committee (1973-74) had to defer the fuller examination of the matter. In their 127th Report, the Committee had *inter alia*, observed "The Committee are anxious that this question in relation to which very significant information has come to their notice at least from the Railways should be seriously pursued at the earliest opportunity."

4. The background information called for from the Ministries/Departments was not made available even to the Committee (1974-75). After a great deal of persuasion the Ministry of Finance managed to collect the requisite information from the

Ministries/Departments and supplied the same to the present Committee. The material furnished by the Ministries/Departments contained much significant information about the working particularly of IBM and ICL, the two predominant multi-nationals engaged in the field of computers and data-processing equipment.

5. At their sitting held on the 7th November, 1975, the Committee decided that it would be worthwhile to examine those major Ministries/Departments who had incurred large expenditure on the acquisition of computers and data processing equipment in order to make an assessment of their utilization. Accordingly, the Committee took evidence of the representatives of the various Ministries/Departments at their sittings held from 26th to 29th November, 1975. At their sitting held on the 13th December, 1975 the Committee examined the Secretary, Department of Electronics. The Committee considered and finalised this Report at their sitting held on the 27th April, 1976. The \*Minutes of these sittings form Part II of the Report.

6. A statement showing the conclusions/recommendations of the Committee is appended to the Report (Appendix XIV). For facility of reference these have been printed in thick type in the body of the Report.

7. The Committee place on record their appreciation of the assistance rendered to them in their examination of the subject by the Comptroller and Auditor General of India.

8. The Committee would also like to express their thanks to the officers of the various Ministries/Departments for the cooperation extended by them in giving information to the Committee.

NEW DELHI;  
April 28, 1976.  
Vaisakha 8, 1898 (S)

H. N. MUKERJEE,  
Chairman,  
Public Accounts Committee.

## CHAPTER I

### PRELIMINARY OBSERVATIONS

1.1. Since the Industrial Revolution, perhaps no single technological innovation has influenced and even transformed the way of life and attitudes of mankind to the extent computers and other allied aids to data processing have done. Computers have almost come to dominate the second half of the Twentieth Century. Of all the factors which, in the advancing society of today, are having an impact on man's relationship to his environment, computerisation has, perhaps been the most powerful. As the US President's Science Advisory Committee (February 1967) aptly pointed out, 'Computing is becoming almost as much a part of our working life as doing arithmetic or driving a car'.<sup>1</sup>

1.2. Similarly, few subjects have sparked off such controversy as computerisation or automation which is the form in which computerisation is envisaged by large numbers of people. As the Committee on Automation (1972) put it: "For some, it is the harbinger of an age of plenty and progress—a development which opens up vistas of greater productivity and higher standards of living. Some others have viewed it as an unmitigated curse which would deprive man of his employment and functions and ultimately dehumanise him, making him a slave of the machines."

1.3. During the last two decades or so, computerisation has made a tremendous impact on science and technology. In the United States of America, the number of computers increased from a handful in 1950 to 6,000 in 1960 and nearly 77,000 in 1970. In the United Kingdom, the number of computers was round 5,000 in 1969, while in West Germany, the number was around 6,400 at about the same time. Japan had over 4,500 computers in 1969 and their number was expected to touch 13,000 by 1972. The Soviet Union too has made large strides in computerisation or automation and it is expected that complete automation would be achieved there on a massive scale by 1980, with an increasingly rapid transition to completely automated workshops and factories.<sup>2</sup>

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<sup>1</sup>. 'Computers in Higher Education'. Report of the President's Science Advisory Committee, Washington D.C. February 1967.

<sup>2</sup>. India, Committee on Automation, Report, Delhi, Manager of Publications, 1972.

<sup>3</sup>. *ibid.*

1.4. In the hierarchy of data-processing systems, the digital computer comes first in respect of speed, accuracy and versatility, followed by the Unit Record Machine (URM) which, however, is much inferior to the electronic computer. At the lowest level of the hierarchy are the calculating machines and other allied devices, both electrical and electronic.

1.5. The history of computers in India is of fairly recent origin. The first Unit Recording Machine was introduced in the country in the 'twenties, and at the end of 1970, it was estimated that there were nearly a thousand such systems in use in different parts of the country. The first digital computer was installed in 1956 at the Indian Statistical Institute, Calcutta, and the first commercial computer was installed by Esso Standard Eastern Inc. Bombay in 1961. During 1962 to 1964, 14 computers were installed, out of which as many as 12 were in research and development organisations. The pace of computerisation quickened from 1965 and as many as 30 commercial installations came into existence during 1965 and 1966. A further spurt was registered during the next three years, with 20 computers being installed on an average every year. After a fall in the number of installations in 1970, a large increase was again registered in 1971, with as many as 23 computers being installed upto August, the highest number in any year.<sup>4</sup>

1.6. At the beginning of 1975, there were over 235 computers in different organisations and about 40 more were on order. Of this, around 15 small analogue computers have been operating primarily in the research and educational institutions. There were also about half a dozen ICL-1004 calculating machines which, however, are not considered as computers proper by both the users as well as the manufacturers. The manufacturers—International Computers Ltd. (ICL)—are in the process of withdrawing these machines and encouraging the clients to go in for modern systems.<sup>5</sup>

1.7. The following table indicates the number of computers introduced in the country, year-wise, since 1961.<sup>6</sup>

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<sup>4</sup>. *ibid.*

<sup>5</sup>. Gopalakrishnan P. and Narayanan K.S.—Computers in India: An Overview, 1975. P. 26.

<sup>6</sup>. *ibid.*

## Position as on 1 August, 1974

Year	No. of computers installed
1961 . . . . .	2
1962 . . . . .	1
1963 . . . . .	2
1964 . . . . .	8
1965 . . . . .	12
1966 . . . . .	16
1967 . . . . .	22
1968 . . . . .	20
1969 . . . . .	21
1970 . . . . .	11
1971 . . . . .	33
1972 . . . . .	14
1973 . . . . .	16
1974 . . . . .	11
1971-74*	28
Total	217

1.8. Of the 217 computer installations in the country, as on 1st August 1974, the largest group of 143 (66 per cent) computers had been provided by the IBM World Trade Corporation. 10 Honeywell systems had been installed in Government departments and R&D organisations. International Computers Ltd. (ICL) had supplied 28 (13 per cent) computers. The Electronics Corporation of India Ltd. (ECIL) had its first computer, TDC-12, installed in April 1971 at the Bhabha Atomic Research Centre. The total number of TDC series computers installed in the country, mostly in Government and R&D organisations, added upto 35 as on 1st March 1975. The first business system in the series, TDC-12, was intalled in December 1973 at the Administrative Staff College of India, Hyderabad, and a business system with the advanced model, TDC-16 was expected to be operational in 1975 at the Bombay Stock Exchange. One single model, IBM-1401, accounted for about 48 per cent of the total number

\* Exact year of installation not known, but known to have been installed during this period.



of computer installations in the country in August 1974. The following table presents the number of computer models in operation as on 1st August, 1974:

TABLE 2

Computer model	No. of units installed
<i>IBM World Trade Corporation</i>	
IBM 1401 . . . . .	104
IBM 1620 . . . . .	16
IBM 1130 . . . . .	8
IBM 1410/1460 . . . . .	3
IBM 360/30 . . . . .	1
IBM 7044 . . . . .	1
IBM 370/55 . . . . .	1
IBM 360/44 . . . . .	5
IBM 1800 . . . . .	2
IBM 1440 . . . . .	2
	} 143
<i>International Computers Ltd.</i>	
ICL 1300 . . . . .	4
ICL 1901/1902 . . . . .	2
ICL 1903/1904/1901A . . . . .	20
ICL 1909 . . . . .	1
ICL SIRIUS . . . . .	1
	} 28
<i>Honeywell Inc.</i>	
Honeywell 400 . . . . .	10
<i>Electronics Corporation of India Ltd.</i>	
TDC-12 . . . . .	19
TDC-312 . . . . .	1
TDC-16 . . . . .	3
	} 23

Computer model	No. of units installed
<i>OTHERS</i>	
Control Data Corporation (CDC-3600-160A)	1
Hewlett Packard	1
Varian	1
PDP	2
MINSK II	2
ISIJU	1
Eliot 803/920	3
BESAM	1
REYAD	1
Total	217

1.9. Government departments such as the Indian Railways, the Government Computer Centre and the public sector undertakings had also joined the computer bandwagon since 1966. As on 1st August, 1974, there were 38 computers in various government departments and organisations and 37 in the public sector undertakings.

1.10. The attention of the Public Accounts Committee (1973-74) had been drawn, through paragraphs 42 and 43 of the Report of the Comptroller & Auditor General of India for the year 1971-72, Union Government (Railways), to the inadequate utilisation of the IBM computers installed on the Indian Railways and to certain defects and irregularities in the contracts and agreements entered into with the firm for the hiring of the computers as well as in the procurement of peripheral equipment like Disc Packs. The examination by the Committee of these paragraphs revealed that the purchase hire of computers and other data processing equipment from the IBM World Trade Corporation had very much wider ramifications and that the transactions were not confined to the Railways alone, since a number of other Government departments had entered into agreements with this giant multi-national corporation, which appeared, besides, to have been imposing its own terms and conditions on Government and other users. An examination of the utilisation of the computers on the Railways also disclosed that the computers had not been installed after any real analysis of the requirements, with the result that the machines were often idle and always very far from being

put to the optimum use. It also appeared that the overall objectives of computerisation had neither been comprehended nor clearly spelt out before installation. Thus, many routine accounting applications, which could well have been done manually, were computerised. This apart, the Committee found that for the Disc Packs, the Corporation had charged the Railways an inflated sum of Rs. 3,712 each (490 US Dollars), whereas the prices disclosed by the firm in the bills of entry ranged between Rs. 498 and Rs. 517 (265 Deutsche Marks and 275 Deutsche Marks) and had been assessed to Customs duty at no more than Rs. 925 each.

1.11. Meanwhile, the Comptroller & Auditor General of India drew the attention of the Government of India, in April 1968, to a contract in 1966 with the IBM World Corporation for the supply of data processing equipment, which had involved certain items of indigenous manufacture, in which prices were stipulated in dollars for payment in rupees. Consequently, Government were committed to an increased liability in rupees as a result of the subsequent devaluation of the rupee in June 1966. The Comptroller & Auditor General felt that there was no justification for stipulating the contract prices of stores of indigenous manufacture in terms of dollars for payment in rupees and had suggested that Government should examine if some rectificatory action was possible.

1.12. Particulars of such contracts entered by IBM with a few representative Ministries were subsequently examined by Government to see whether a similar stipulation existed in other contracts as well. Government found that prior to devaluation, in June 1966, prices were indicated by IBM in dollars and the terms of the contracts required all payments to be made in Indian rupees 'at the official exchange Bank selling rate of exchange for US dollars at the time of payment'. The rupee prices of IBM equipment available for outright purchases were also unwarrantably and *suo motu* increased by IBM by 57.5 per cent consequent upon devaluation, even in respect of the indigenous content of manufactured items. Similar was the case in respect of the equipment taken on a rental basis prior to devaluation, as the maintenance charges were expressed in dollars.

1.13. Some attempts were stated to have been made by the Commerce Ministry to persuade IBM not to increase prices following devaluation, particularly on account of the large indigenous content of the equipment supplied. It was also understood that apart from Government departments, other users of IBM data processing equipment had also represented against the increase in purchase prices as well as maintenance charges by 57.5 per cent following devaluation.

Government met with partial success in their efforts with IBM agreeing to return part of the additional money which it had collected following devaluation, upto the period ending 31st December, 1968. The Comptroller & Auditor General of India, therefore, suggested that Government should consider 'whether the rates and prices at which IBM will presumably charge with effect from 1 January, 1969, are justified by the facts of the case'. The Comptroller & Auditor General added: 'It is presumed that Government would go into the costs of IBM and rate of return on which it had determined the hire rates and prices'.

1.14. Government subsequently tried to persuade IBM further to extend the lumpsum adjustment given by them to a period beyond 31 December, 1968. IBM, however, categorically declined to do so. The main points made by IBM during discussions with Government justifying their action in raising the prices were:

- (i) It had taken them an extremely long period to establish D.P. business on profitable basis in India, as was evidenced by the Cumulative losses for the period 1951 through 1965.
- (ii) IBM prices had remained practically unchanged since they had accepted dollar agreements.
- (iii) The IBM was already seriously contemplating a price increase, effective early 1966, of the order of 67.6 per cent to achieve a minimum return on investment of 10 per cent for the year 1966.
- (iv) Although a price increase of 67.6 per cent was warranted from the beginning of 1966, it was restricted only to 57.5 per cent, i.e. the extent of devaluation of the rupee, so as to avoid hardship to customers over and above that due to devaluation.

1.15. While returning part of the money collected by them following devaluation, IBM had made it clear that they were doing so only as a gesture of goodwill and that the legality and justification of the price increase could not be questioned.

1.16. Thereafter, an Inter-Ministerial Working Group was constituted, in July 1973, by Government to go into the question of costs of IBM and the rentals and prices charged by them. The terms of reference of this Working Group were as follows:

- (i) to look into the prices charged by the IBM with effect from 1st January 1969, onwards to their various customers

in India, including Government Departments and other Public Sector Agencies, for hire|purchase of Computer Systems and other data processing etc. machines;

- (ii) to assess whether the price/rentals charges are reasonable, taking into account the costs, operating expenses and such other relevant factors, as also a return on investment which could be considered fair in business of this type;
- (iii) to recommend norms to be followed in accepting price|rentals fixation in future;
- (iv) to go into the *modus operandi* of IBM contracts with its customers and suggest measures to prevent the IBM from unilaterally increasing the prices|rentals; and
- (v) to look into the export import prices and inter-company pricing based on which M.s. IBM operate in India.

On 5th July 1973, the Department of Electronics enlarged the terms of reference so as to include an examination of the costs and rentals and prices charged by International Computers Ltd. also.

1.17. In September 1973, the overcharging of Disc Packs supplied to the Indian Railways by IBM had also been referred to the Department of Electronics by the Ministry of Railways with a view to investigating the bills of entry and the price charged to the Railways. It was, therefore, decided that this aspect be specifically investigated under item (v) of the terms of reference mentioned in the preceding paragraph.

1.18. In view of the far-reaching implications of the operations of IBM in India, the Public Accounts Committee (1973-74) considered, at their sitting held on 18 October 1973, whether a sub-committee may be constituted to examine in detail the transactions entered into by Government departments with IBM and other suppliers of computers and data processing equipment. After a detailed discussion, it was decided that the entire Committee should examine the matter exhaustively. Accordingly, in order to obtain the relevant background material to facilitate the Committee's work, a questionnaire (Appendix I) was sent to the Ministry of Finance, on 12th December, 1973, with a request that the Ministry may coordinate the collection of information from various Ministries and furnish the requisite information in a consolidated form. Unfortunately, the requisite information was not received by the Committee till April,

1974, and the Committee observed as follows in their 127 Report (Fifth Lok Sabha), presented to the Lok Sabha on 29 April, 1974:

“The Committee’s examination of the purchase/hire of machinery and equipments from this firm, has brought out wider ramifications requiring an immediate and a detailed probe. Such transactions with this firm were not confined to Railways alone. A number of other Departments of Government had also entered into business deals with this firm. Normal procedures of purchases did not appear to have been followed. There had been several lapses and irregularities in the transactions. The firm had been imposing its own terms and conditions on the Government. The purchase price or the rental, as the case may be, had been expressed in terms of dollars and the rupee equivalent as on the date of payment had to be paid presumably even in the case of indigenous manufacturers and the machinery imported prior to devaluation of the rupee. This had the effect of considerably enhancing the liability for payment after the devaluation in June 1966. Further, it appeared that the firm could and did in fact unilaterally raise the price/hire charges in terms of the agreement and that the Government accepted it without any questioning. The implications of declaring a low value to the Customs as also the reasonableness of price/rental charges required to be gone into keeping in view particularly the movement of foreign exchange and the Income-tax liability of the firm. Incidentally the real need for computers, the economics of hire *vis-a-vis* purchase, the actual need-based utilisation and the results achieved also required critical examination. The Committee accordingly decided to go into the matter fully. As the matter concerned various Ministries/Departments, a detailed questionnaire was sent in December 1973 to the Ministry of Finance to collect, consolidate and furnish the required background information to enable the Committee to have an examination covering all aspects of the deals with this firm and other similar firms. Very unfortunately the Committee have not received the requisite information so far (April 1974) inspite of repeated reminders and close persuasion. This is regrettable. The Committee have, therefore, reluctantly to defer the fuller examination of the matter. They expect that the Ministry of Finance will not delay the information any

further and the outcome of the study undertaken by the Inter-Ministerial Working Group should also be reported to them without any further delay. The Committee are anxious that this question in relation to which very significant information has come to their notice at least from the Railways, should be seriously pursued at the earliest opportunity.”<sup>8</sup>

1.19. On 4th June 1974, the Ministry of Finance furnished some information in this regard collected from various Ministries/Departments. It was, however, found that the information was incomplete and wanting in many respects. Therefore, on 22nd July 1974, a further questionnaire (Appendix II) containing further specific points on which the Public Accounts Committee (1974-75) desired information was sent to the Ministry of Finance. The requisite information could be coaxed out of the Ministry only after long protracted correspondence.

1.20. An analysis of the information finally received from various Ministries/Departments, *inter alia*, revealed that

- (i) large amounts had been spent by Ministries/Departments on the purchase/hire of computers and other data processing equipment, while some Ministries/Departments had purchased or hired entire systems including the Central Processing Unit (CPU), others had purchased/hired only the peripheral equipment such as card punches, verifier, collectors, sorters etc. and processing the data on a Central Computer on a time-sharing basis;
- (ii) no uniform procedure had been followed by the Ministries/Departments in acquiring such equipment from the two main suppliers, IBM World Trade Corporation and International Computers Ltd.;
- (iii) the reasonableness of the terms and conditions of the agreements with the supplying firms had not been carefully gone into by the Ministries/Departments.
- (iv) computers had been introduced on a relatively *ad-hoc* basis without adequate cost benefit analysis; and
- (v) IBM had the lion's share of transactions entered into, often apparently on IBM's own terms, with the different Ministries/Departments.

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<sup>8</sup> India. Public Accounts Committee, 127th Report (5th LS), Lok Sabha Secretariat, April 1974, paragraph 1.106, p. 88.

1.21. In July 1974, the Inter-Ministerial Working Group submitted its Interim Report in which the Group gave its view that there was a *prima facie* case for reduction in rates paid for computer acquisition/hire to extent of about 25 to 30 per cent. The Group accordingly recommended that the Department of Electronics should discuss with IBM and ICL further steps, such as (a) an agreed reduction in prices with effect from January 1969 and (b) further detailed cost-analysis and allied investigations if (a) proved infructuous.<sup>9</sup>

1.22. During their examination of paragraph 17(b) of the Report of the Comptroller and Auditor General of India for the year 1972-73, Union Government (Civil), Revenue Receipts, Volume II, Direct Taxes, the Public Accounts Committee (1974-75) found that the Income-tax assessments of IBM World Trade Corporation had been finalised without any genuine scrutiny, particularly of the amounts claimed by the company as 'Head Office Expenses'. The Committee found that the deduction claimed by IBM on this account worked out to 78 per cent of the book-profits prior to the charge of this payment. Besides, the company itself had come forward, in November 1974, with a voluntary disclosure under Section 271(4A)(ii) of the Income-tax Act, 1961, admitting an excess claim on account of head office expenses for the years 1966 to 1970 to the extent of US dollars 450,000 and submitted amended tax returns. All these relations added a new dimension to the subject of inquiry, and specially the operations of IBM in India.

1.23. The Public Accounts Committee (1975-76) reviewed the entire question, at their sitting held on 7th November 1975, and decided that in view of the important and somewhat disquieting information already available, it was imperative to examine the Ministries/Departments which had incurred considerable expenditure on the acquisition of computers and other data-processing equipment and to evaluate their utilisation, the purchase-procedures followed, the terms and conditions of agreements with the supplier firms, and other related issues. Since IBM had the whiphand on the Indian computer scene and a world-wide blaze of publicity had revealed how many of its operations, as of some other business dinosaurs were highly suspect, the Committee decided to examine, in some detail, the Indian operations of this multi-national corporation, and also the steps contemplated or adopted by Government to achieve self-reliance to the extent desirable and possible, in the

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<sup>9</sup>. India, Inter-Ministerial Working Group to go into the question of costs of IBM and ICL and the hire rates or prices charged by them. Interim Report, July 1974.



computer industry. The question of data-security inevitably also formed one of the major issues before the committee.

1.24. Accordingly, at their sittings held from 26 to 29 November 1975, the Committee examined the representatives of the following Ministries/Departments:

- (i) Department of Space.
- (ii) Ministry of Tourism & Civil Aviation.
- (iii) Ministry of Home Affairs.
- (iv) Registrar General of India.
- (v) Central Bureau of Investigation.
- (vi) Planning Commission.
- (vii) Department of Statistics.
- (viii) Department of Defence Production.
- (ix) Ministry of Commerce.
- (x) Department of Commercial Intelligence & Statistics.
- (xi) Chief Controller of Imports & Exports.
- (xii) Ministry of Communications.
- (xiii) Department of Agriculture.
- (xiv) Directorate of Economics & Statistics.
- (xv) Ministry of Information & Broadcasting.
- (xvi) Department of Personnel.
- (xvii) Department of Revenue & Insurance.
- (xviii) Central Board of Excise & Customs.
- (xix) Central Board of Direct Taxes.
- (xx) Department of Economic Affairs.
- (xxi) Reserve Bank of India.
- (xxii) Department of Expenditure.
- (xxiii) Department of Supply.
- (xxiv) Department of Electronics.
- (xxv) Electronics Commission.

The Committee also examined the Secretary, Department of Electronics at their sitting held on 13th December, 1975.

1.25. Arising out of the evidence of the representatives of the aforesaid Ministries/Departments, the Committee called for further information to clarify some of the issues involved in the process of

computerisation in Government Departments. While all other Ministries/Departments furnished the requisite information to the Committee, it so happens that the Ministry of Commerce had not furnished the information fully till even the date of finalisation of the Report.

## CHAPTER II

### EVALUATION OF THE NEED FOR COMPUTERISATION

2.1. The main justification offered generally for introducing computers and other data processing equipment is that computerisation facilities/the processing of a large volume of data with speed ease and accuracy. Some claim further that computerisation enables an organisation to introduce such modern techniques of management as are essential to increased productivity also, in the long run, to reduced costs.

2.2. On this subject, however, the Committee on Automation (1972) observed '*inter alia*':

"Generally speaking, the management in arriving at the decision is influenced by several factors, mainly economic, technical and institutional; social, political and psychological factors also influence them, though less directly. It has sometimes been stated that *computers were introduced in many cases as mere status symbols and to keep up with the 'Joneses' and not with any clear-cut and calculated assessment of its benefits as an effective management tool.* Various studies into this aspect of why managements have gone in for computers seem to suggest that *the criticism is not altogether unfounded; and that even where the computer was introduced in order to obtain certain specific advantage, in most cases it was still not being efficiently used as an adjunct to a well-designed management information system.*"<sup>10</sup> (Italics added).

According to a study cited by the Committee on Automation in this context, "in most companies computers have been acquired as a result of pressure from within due to increase in volume of work and *not out of the managements' foresight and anxiety to benefit from a new management opportunity.*"<sup>11</sup> (Italics added). Yet another study referred to in the study observes:

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<sup>10</sup> Ibid. Committee on Automation, Report, Delhi, Manager of Publications, 1972, pp. 37-38.

<sup>11</sup> Computers & Corporate Policy, The Indian Institute of Management, Ahmedabad, pp. 18-19.

".....While taking certain jobs to the computer, cost considerations received considerably low priority as compared to management's desire to introduce modern management control system."<sup>12</sup>

2.3. The said Committee, however, went on to add in all fairness:

"Our own enquiries into this aspect of the problem have revealed some interesting facts. While there have been instances, though not many, in which the computer was introduced without a clear understanding of its utility and potentialities, it would appear that in many cases it was the growing volume of their operations and the development of professional management conscious of the need for adopting modern management tools and techniques that impelled them to go in for computers. In many undertakings, the managements felt that the traditional methods were inadequate or unsuited to their expanding operations. In some, computers were considered indispensable for developing certain new or better quality products, design project planning, etc."<sup>13</sup>

2.4. The following have been cited by the Committee on Automation as reasons commonly made out for the introduction of computers in India:

- (1) Inadequacy of the unit record system to cope with increased volume of data;
- (2) Improvement in quality of the products;
- (3) Better service to the consumers;
- (4) Reduction in cost of production and consequent improvement in competitive position;
- (5) Greater speed and reduction in time lag in processing of information;
- (6) Greater accuracy in compilation and analysis of data; and
- (7) Efficient Management information system."<sup>14</sup>

2.5. A comprehensive survey of the Indian computer scene was made not long ago by the Administrative Staff College of India, Hyderabad. According to its authors, Sarvashri P. Gopalakrishnan

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<sup>12</sup>. Works Study Team on Automation (Office Automation) in Maharashtra State (1970.) Report, p. 37.

<sup>13</sup>. India, Committee on Automation, Report, Delhi; Manager of Publications, 1972. p. 37

<sup>14</sup>. *Ibid.* Pp. 39-40.

and K. S. Narayanan, the major computer operation in most commercial organisations related to the accounting function, while advanced processing systems like inventory models, linear programming for optimum product mix and optimum transportation pattern, project management reporting, etc. were still in the nascent stages of application. The study points out that 26 out of the 115 organisations which responded to the survey considered 'Management Information System' as the most important reason for computerisation. While 20 organisations indicated that their data was too large for manual operation, 16 cited the introduction of modern management techniques as the motivating force behind computerisation in their organisation. Most of the educational and R & D organisations had chosen computerisation for reliability and speed. Pointing out that it was, therefore, "apparent that the computer does not constitute a status symbol in the user organisations", the study goes on to observe:

"It should, however, be mentioned that the impression gathered by the personal interviews, is that, *by and large, the Indian management is not very clear about the overall objectives of computers, and in many cases, computers were acquired with a view to dealing with the immediate and specific problems.*"<sup>15</sup> (Italics added).

2.6. In view, thus, of the fact that in quite a few cases, apparently, computerisation had been resorted to without adequate assessment and evaluation of its need and that computers had been installed on a relatively *ad hoc* basis without any cost-benefit analysis, the Committee considered it necessary to examine, in some detail, the applications selected by different Government departments/agencies for computerisation, the nature of assessment and evaluation made by them prior to taking such decision, the motivating force behind the decision, and other related issues. The position emerging from the Committee's examination is discussed in the succeeding paragraphs.

2.7. The details regarding the computers and other data-processing equipment acquired by different Government agencies and the applications for which they were acquired, have been compiled from the material furnished to the Committee by different Ministries/Departments, and are indicated in Appendix III.

2.8. The Committee enquired from the different Ministries/Departments the rationale for their decision to instal computers or

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1. Gopalakrishnan, P. and Narayanan, K.S., Computers in India, an Overview. 1975, Pp. 11-13.

data-processing equipment. The replies received in this regard from the various Government agencies offer much suggestive material and have been summarised in Appendix IV.

2.9. The Committee also desired to know whether the nature of work was so complex that it could not be done manually or whether the idea of mechanisation had been sold by the suppliers who were known to be expert salesmen. The replies furnished in this regard by the different Ministries/Departments are indicated below:

#### **Department of Space**

"As stated earlier, computerisation has been introduced to further research and development work in areas where manual calculations can neither cope up with the speed required nor handle the magnitude of calculations within any reasonable time limit. The same is the case with the dedicated computers acquired for specific items of work like satellite check-out. For example, in real time tracking within 50 milli-seconds the trajectory of the rocket has to be calculated. Again, in image processing, pictures consisting of  $400 \times 400$  elements have to be processed in a few minutes. In the case of trajectory optimisation, the calculations take hours to complete even in a sophisticated computer and cannot be attempted at all manually. Similarly, in a Satellite Launch Vehicle launch some 600 parameters would require to be checked out in half an hour before launch.

The computers were not, therefore, purchased with any idea of mechanisation where manual labour can deal with the problems, but only to handle problems which can be solved only with the use of computers."

#### **Ministry of Tourism and Civil Aviation**

##### **(A) India Meteorological Department**

"The problem of Numerical Weather Prediction cannot be undertaken manually. It may be mentioned that L. F. Richardson who attempted Numerical Weather Prediction manually estimated that 64000 human computers working for 24 hours could just complete the forecast valid for 24 hours. Even with a relatively simple numerical model for a limited area as many as 20 million arithmetic operations are involved in arriving at a 24 hours forecast. Thus it will be seen that a fast computer is an absolute necessity for this type of work."

(B) *Indian Airlines*

"In most of the application areas which have been computerised, it was not possible to provide the required information efficiently and in time by manual methods. Specially, in the case of Advance Reservation System, with the growth in traffic, it would not have been possible to action the reservation requests on each flight card manually. Similarly, in the case of Inventory Control review period has been brought down to one month as against six months in the holdings. With all endeavours made during the past years, even with mechanisation of part of the process through Unit Accounting machines, bills could not be raised before two to three months after the sale took place. This period now has been reduced to two/three weeks. This delay in raising the bills led to further delays in realisation of book debts. Effective Credit Control methods could not be introduced in the manual system. This resulted in blockage of funds. With the computerised system, it is possible to automatically issue reminders to parties indicating latest outstandings at regular intervals. This has helped in bringing down the volume of book debts from over six months outstandings to only two to two and half month outstandings."

(C) *Air India*

"As mentioned earlier, Air India was processing a number of Accounting applications on Unit Record Equipment since 1947. The volume of work on the Unit Record Equipment had become excessive and besides, even with the Unit Record Equipment the delay involved in preparing the results, such as interline billing required by the IATA Clearing House, was unacceptable since these delays involved adverse balance of payment in foreign exchange. Similarly the inventory of Air India had already increased to the level of over 1,25,000 items. It was therefore felt necessary to get the benefit of efficiency and prompt reporting with the help of computer. There was no question of Air India being influenced by Computer Manufacturers in the decision of computerisation of these applications. The nature of Air India's operations made it necessary to use computer."

## Department of Personnel and Administrative Reforms

### (A) *Union Public Service Commission*

“Gradually the number of the competitive examinations held by the Commission has increased. The number of candidates appearing at these examinations as also the number of applicants applying for various recruitments by selection has also steadily increased. There has also been a gradual increase in the number of these machines purchased|hired to cope with the increased volume of work. With the passage of time the schemes of different examinations have undergone many changes on account of the introduction of large number of compulsory and optional subjects. With the use of regional languages as media of examinations for certain subjects, the complexities have increased. A considerable data of specialised nature is now required to be produced for standardising the results of examinations with the help of machines. The combined effect of all these is that some of the basic items to be produced at the moment are so intricate that if tried manually, would never be completed in time and would hamper the smooth conduct of the examinations according to schedule. It would, therefore, be observed that the nature of work had become complex and called for mechanisation for its speedy and efficient disposal.

The idea for the installation of these machines was not sold by any supplier|salesman. The proposal for the installation of data processing machines in the Commission's office was first mooted in 1948 by the then Secretary of the Commission, who during his service in the Navy earlier, had seen the part played by these machines during World War II and was aware of the potentialities of these unit Record Machines and also at the same time, as the Secretary of the Commission, could rightly visualise the future load of work that the Union Public Service Commission might be required to shoulder in time to come.”

### (B) *Institute of Secretariat Training and Management*

“The examinations conducted by the Examinations Wing of the Institute are required to be held at regular intervals



(monthly, quarterly, half-yearly and yearly) and as such only limited time is available for completion of various stages of work of an examination. This work also involves huge volume and some amount of complexity. If the work were to be done manually, it would be well-nigh impossible to complete different stages of an examination within the time available. Further, a few items of work involved are so complex (e.g. preparation of alphabetical master-index of applicants, and order of merit results) that these cannot perhaps be done manually with the requisite accuracy and speed needed. The idea of mechanisation was taken from the long experience of the Union Public Service Commission from whom this work was transferred to the Institute. As a matter of fact, it was only after the Controller of Examinations of the Union Public Service Commission had advised that it was absolutely necessary to have some amount of mechanisation that the I.C.L. were approached. There was thus no question of the idea of mechanisation having been sold to the Institute by the I.C.L."

### **Ministry of Home Affairs**

#### **(A) Registrar General of India**

"The basic data involved 548 million people. In the era of planning, wider and more complex statistics and cross-tabulations are required which cannot have been done speedily, accurately and economically without a computer. The decision to instal the computer was taken in this context and after comparing notes with census authorities in other countries."

#### **(B) Central Bureau of Investigation**

"The idea of mechanisation was not sold to us by the manufacturers/suppliers. It was necessary to mechanise and computerise in the interests of accuracy and speed in retrieval and of quick dissemination to investigators all over the country. This could not be done manually in proper time to be of utility to investigators. For example, through the help of computer, lists of Motor-vehicles stolen or recovered are printed Regn. No. wise, Chassis No. wise and Engine No. wise within a few minutes but this would require a large number of office hands and also take an unusually

long time to compile and type. It may even then be not accurate."

### **Planning Commission**

"As has already been stated, the decision to instal an electronic computer for planning applications was based on the consideration of indispensability for the Commission, of fast computational facilities, for undertaking speedy data processing and complex computations work and for development of the methodology for formulation of plans. The volume of the data and the nature of the analytical and computational problems involved in plan formulation and evaluation are too large to be handled with any efficiency, and in time, through manual processing. For several problems, even the present computer facility has actually proved inadequate, to cope with the dimensions and range of the problems to be solved in connection with plan formulation exercises as well as in connection with examining of various policy questions, from time to time. Similarly, for project appraisal, exercises connected with the time phasing and locational aspects of the projects, which involved the formulation and solution to large scale mixed linear integer programming problems, the present computer has not been adequate. Growing complexities of the economy would require the development of more complex planning models, and their solution and also carrying out exercises to appraise as well as study changes in the plan targets from time to time, in the context of domestic and international changes. Under these circumstances, the question does not arise of Planning Commission falling for the tactics of any 'expert salesmen'."

### **Department of Statistics**

#### **(A) Central Statistical Organisation**

"The number of entries to be processed for one round of census sector is of the order of 10 million. For each survey the results are brought out in two instalments: the summary results and the detailed results. The summary results are brought out in the form of 4 tables: the first relating to each State Union territory by each of 63 industry groups; the second to each State—all industries; the third to each industry—all States and fourth to all States—all industries. In each case data for 10 principal characteristics are presented. The detailed results are in 7 tables

each for 242 sub-groups of Industry under each State. These data also show the detailed break-ups of capital invested, persons employed, salaries and wages paid, fuels and materials consumed, products and by-products manufactured. Manual preparation of the tables which involve much of cross-classification apart from being very time consuming is prone to a large number of errors or inaccuracies."

(B) *Computer Centre, New Delhi*

"A number of applications in the Government Departments involving bulk data processing, information storage and retrieval management information systems and scientific, engineering and statistical applications could not be done manually within the time that the results could be much meaningful. So several of those applications have been computerised by a number of Government Ministries Departments at the Computer Centre, New Delhi, which functions mostly on an 'open shop', basis. So far as the Department of Statistics is concerned, applications of Annual Survey of Industries, Consumer Price Index Numbers and National Sample Survey data have been computerised to provide tabulation in a time and the desired degree of accuracy and data."

**Department of Agriculture**

*Directorate of Economics and Statistics*

"The work being voluminous, the use of data processing equipment was considered imperative. There was no question of the idea of mechanisation being sold by the suppliers."

**Ministry of Information and Broadcasting**

(A) *Audience Research Unit, All India Radio, New Delhi*

"The computation of data collected in surveys undertaken by Audience Research Unit cannot be reasonably satisfactorily done manually as normally all questions are to be tabulated with reference to different variables which need cross tabulation. Manual tabulation therefore will be time consuming and may result in errors."

(B) *Central Sales Unit, Commercial Broadcasting Service, All India Radio, Bombay*

"It cannot, of course, be said that it is impossible to do the work manually. In fact, the work has been done manually so far since the inception of the commercial service in All India Radio in November 1967. But the nature of the work is voluminous and needs speedy disposal. Within a short period of time the schedules have to be made available to the various Stations of All India Radio incorporating all the corrections and changes, and also bills should be made available to the agencies well in time. The speed and efficiency will improve when the process is mechanised."

**Department of Agriculture**

(A) *P & T Board*

"The electronic computer was acquired on the basis of a 'felt' need while undertaking sophisticated R&D projects. In the design of complex electrical filters the order of accuracy required could not be obtained by any manual systems. Similarly, optimisation of switching paths in electronic exchanges could not be done by manual methods. The electronic switching control is similar to a computer and in the design of the control equipment, simulation with an electronic computer is absolutely essential."

"The computation work involved in the design of electronic exchanges, electrical networks, microwave systems and in traffic analysis/simulation are so complex and repetitive with varying parameters that they cannot be carried out by any manual system."

(B) *Overseas Communications Service*

"The nature of revenue accounting work in OCS is complex in the sense that the objectives stated earlier could not have been achieved if the functions were performed on manual basis particularly because the results are required within a given time-frame.

Having felt the need for introduction of machine accounting, an in-house system study was made. However, for planning the practical system, information was obtained from known suppliers in India on our own initiative."

2.10. The Committee wanted to know whether before acquisition of computers and other data-processing equipment, any serious scientific assessment of the work load involved had been made by the user Ministries and Departments, and also the steps, if any, taken to ensure that computerisation did not prove to be merely a labour-saving device. The following position emerges from an analysis of the replies furnished by various Ministries|Departments:

- (1) Some Ministries/Departments such as the Planning Commission, DGS&D, CBI, India Meteorological Department, Department of Defence Production did undertake some **kind of a job analysis** and assessment of the work load before introduction of computers and data processing equipment.
- (2) The Ministry of Information & Broadcasting have informed the Committee that in the Central Sales Unit of the Commercial Broadcasting Service and the Audience Research Unit of All India Radio, no job analysis as such was done. In the case of the Commercial Broadcasting Service, the justification given for the acquisition of the data processing equipment is as follows:

“As per the instructions from the Hon. Minister and the Secretary of I & B at the time of commencement of the Commercial Broadcasting Service in Bombay, the proposal for the purchase of computers was initiated. The machines are not yet operated, pending final inspection report from the Directorate of Inspection and sanction of staff for operation of these machines.”

As regards the Audience Research Unit of All India Radio, the Ministry have stated:

“No job analysis was done prior to the purchase of the machines which were purchased to cope with the heavy tabulation work coming up at various Audience Research Units as a result of reorganisation of Audience Research.”

- (3) In justification of the hiring of electronic data processing equipment, by the Overseas Communications Service, the Ministry of Communications have stated:

“In Government offices in India, the use of the progressive devices for ensuring that correct, accurate and upto date

data becomes available to the decision making authority to enable him to take appropriate decision in time and to review and to revise, seems to be inevitable."

- (4) The Institute of Secretariat Training & Management had acquired data processing equipment, in keeping with the practice followed by the Union Public Service Commission in this regard.

2.11. When asked why no job-analysis was done before acquiring data-processing equipment for the Audience Research Unit of All India Radio, a representative of the Ministry of Information and Broadcasting replied:

"We did not make a 'formal' job analysis. But with the help of IBM engineers we did find out what should be the power of a machine which could take the work-load we have."

Another representative of the Ministry added:

"It was not a comprehensive job analysis in the proper sense of the term, but they applied a value judgement to that situation. The volume of work was increasing and they felt they had a larger work load which would need a larger machine."

2.12. Since machines acquired by the Sales Unit of the Commercial Broadcasting Services of All India Radio had not been put to use even after two years of installation, the Committee asked whether this did not indicate that there had obviously been no genuine assessment of the requirements of the equipment. The representative of the Ministry of Information & Broadcasting replied:

"That is unfortunately the fact."

Another representative further explained:

"The main functions of the Commercial Broadcasting Service are four, viz. sale of air-time, billing, audience research to ascertain the reactions of the listeners to our broadcasts, and the cost accounting i.e. what we are earning or losing. All these require a data processing machine.

That is why, ever since the starting of the commercial service, we have been thinking in terms of having that machine. Earlier, we had only one hook-up viz., Bombay-Poona-Nagpur; but later we had Calcutta, Delhi and Madras. By 1971, we had a net work of 9 hook-ups and 18 centres. We then realized that with a view to ensuring speed, accuracy and saving manpower, we should go in for machines."

2.13. In reply to a question as to why there should be an attempt to save manpower, the witness replied:

"We have to take advantage of the modern scientific methods."

2.14. The Committee desired to know whether the applications computerised in the Union Public Service Commission and the Institute of Secretariat Training & Management could not be done manually and whether any comparative assessment of the expenditure on mechanisation and manual work had been made. The Secretary, Department of Personnel stated in evidence:

"In ISTM we are spending Rs. 1.54 lakhs in terms of rental etc. If this work were to be done manually the total expenditure would have been of the order of Rs. 9.63 lakhs. So, we are saving almost Rs. 7 lakhs per year by employing these machines."

2.15. When the Committee intervened to point out that resorting to mechanisation also led to unemployment in the process, the witness replied:

"I would like to explain that when these examinations are conducted they have to be worked in a time-frame. At one time in UPSC no more than 4,000 students used to appear for IAS, etc. This year as many as 25,000 are writing the examination. Now, within a period of 3-4 months the answer books have got to be examined, result tabulated, candidates to be called for interview and results have to be conveyed. Unless it is done within the time-frame there will be overlapping. The same is the case with ISTM. They are now working with 80,000 applicants as against 18,000 who applied in 1970. Then there is the element of secrecy and also there are chances of inaccuracy when a large number of people handle the result sheets."

He added:

"It can be done by human beings but at a tremendous cost in terms of time and also in terms of accuracy of the results and also secrecy. The UPSC at present deals not only with IAS examination but also with a large number of other examinations and the total number of candidates which they handle is 80,000."

2.16. Since the machines being used in these two organisations were not of a very sophisticated type, the Committee pointed out that there would perhaps be no qualitative difference in the result if the same work were to be done manually by employing more clerks, which while inflating the wage bill could be justified on socio-economic grounds. In this connection, the Secretary, Department of Personnel stated:

"The main thing is the constraint on time. Let us say, we get 45,000 applications for the LDC's examination. All these applications have got to be screened, processed and within 15 days you have got to issue the admission cards so that they can get to the examination and write the examination. You have also got to work out other data in order to find out that medium in which the candidates are going to write the examination, to screen all these applications and to find out whether they are in order. There are various other things. There are about 15 steps that have been indicated here in this note. If you like, I can give you a copy of this note which will indicate that the time limit at the disposal of anyone who is doing this job is extremely limited and if we want to put everything, we will have to continue with this existing arrangement. As you said, it is possible to get a large number of people. But, the very large number of people which you have in mind, is not a very large number of clerks. This only means, 20 UDCs, 10 Assistants, 5 Section Officers, one Deputy Director and 100 Subordinate clerks. This is the number, which we have calculated according to the norms, which would have been employed had these machines not been employed. Even in respect of social cost, I think, we would not be dislodging far too many people, to become extremely concerned about this matter.

Apart from the problems that I placed before you in respect of secrecy, accuracy and the time factor, the other point



is this. I agree that there is some social factor involved. But, the point to consider is that, within that time limit, the processes which have got to be undergone can be done by this machine through this simple device of a card where all the information is put in and so on. If these were to be done manually, then, so many more registers will have to be opened, so many more people will be handling this and the other point is that, as I submitted earlier, these people will be working only for a period of time."

2.17. The Committee enquired into the methodology adopted for the introduction of a computer in the office of the Registrar-General of India. The Home Secretary stated in evidence:

"Talking of the census organisation for instance, earlier it was all being done by manual processes. In 1961 we had the mechanical processes. It was in 1966 that the question of introduction of the computer for the processing of data was taken into consideration. Two parties were in the field at that time and we got the studies carried out by them as to what would be the type of computer which would be most useful for the purpose and we decided to have one IBM computer of a particular type."

2.18. In response to a questionnaire sent out by the Committee, the Central Water & Power Research Station, Poona had stated that they were using a Card Punch for solving scientific, engineering and other problems. When the Committee pointed out, during evidence, that the kind of job done at the Research Station with the help of a Card Punch could perhaps be done more efficiently, manually and that it would, therefore, appear that the Ministries/ Departments had gone in for mechanical gadgets more for their prestigious value rather than their actual utility, the Secretary, Department of Expenditure stated:

"We have been very conscious of this problem. There are institutions which may want expensive hardware for prestige purpose. You can be taken in by the salesmanship of a computer company. It is not merely IBM, there are other companies also. Their aim has been directed towards selling very good looking packages of hardwares and softwares. There is a prestige element involved in going over to a computer. So, this is a fact which we have taken into account. I am sure this is also taken

into account and discounted by the Department of Electronics in approving any system.

The specific question about card punches is not quite on par. That system is the data feeding system which is required for mechanical tabulation or electrical system or electronic computer system. Card punch is a simple equipment by which data has to be fed. That is, in fact, a labour intensive activity. The conversion of data from paper into the card punch is one of the growing fields of educated employment in the country. I don't think one could say that was not a good one."

2.19. Justifying the need for computerisation in the Central Bureau of Investigation, the Director, C.B.I. stated in evidence:

"When we started this in 1964-65, and it was being done manually, we were getting about 1,000 reports per year and preparing only 1,000 cards per year. Gradually, it went up to over a lakh of cards per year. We cannot maintain cards of all crimes and of all criminals. If we were to do that, it would run into crores. As to what kind of crime records we should maintain, this is decided at the conference of the DIGs of State CIDs and also at the conference of IGs of various States. This is decided by a general consensus. After all, the information has to be supplied to us by the States. They have to build up an organisation for receiving the necessary information from the police station, at a focal point, or it may be at the state Headquarters or at the IG's office or at the DIG's office or the CID's office. From there, it has to be transmitted to us. As the organisation grows, we are able to maintain more and more crime records. For example, in the beginning, we were maintaining records only for inter-State cheats, kidnappings for ransom or kidnapping of children for begging purposes and so on. Later on, we added fire-arms and stolen cars. Recently, we had added all thefts of antiques and idols and also narcotic offences. We are adding records on more and more types of crimes."

2.20. The Committee desired to know whether, in a country like India where there was no dearth of labour, labour-saving could be a justification for computerisation particularly for non-techni-

cal and non-scientific applications. The Committee also wanted to know if there was any clarity in the objectives of computerisation in the present state of our development. The Secretary, Department of Expenditure stated:

“The objectives are efficiency in the sense of being able to do certain things which, although theoretically this can be done manually, in practice are not so achievable. The the case of the system the Director of CBI mentioned. It would be possible to replace the computer system with card indexes and cross references. But in fact the card indexing with the reference mark being done by clerical staff would not really be feasible and the data could not be retrieved in time. So we have no alternative in cases like that except to put the information on a computer through which the retrievability is both simple and quick. We have cases of that kind.

The other kind of cases which was mentioned is where the saving of time is of the essence. One might mention the computer system installed by the Director General of Commercial Intelligence. There, again, the earlier system was that of manual tabulation, but it had certain deficiencies. By the time the analysis and data was available, months would pass. That statistical information had also very limited use for planning purposes and for any policy making. Moreover, the accuracy of a completely manual tabulation system is very much lower than that of a computerised or mechanical or electronic system and we have had instances or cases of large discrepancies and errors between the import/export statistics as maintained by the Director General of Commercial Intelligence and the export earnings figures of the Reserve Bank.....So, in certain cases of obtaining data for Government time is of the essence.”

In this context, the Home Secretary added:

“About the Census Organisation, I may add that the data that had been processed for the one per cent national sample for instance is useful even today for the purposes of planning and we make the maximum use of it in the planning field. In this particular case, if we had gone in for the

manual process, it would have taken us two years more than what it has done.

Similarly, data pertaining to degree holders and technical personnel was produced in record time as it was required by the Planning Commission and Ministry of Education for the purpose of man-power planning."

2.21. When the Committee pointed out in this context that in any assessment for the use of a computer in a particular institution in India, the social costs of mechanisation would also have to be taken into account, the Secretary, Department of Expenditure, stated:

"I absolutely agree with the observations of the hon. Member that, in assessing the economic justification of installation of a computer, the social costs have to be taken into account. Theoretically, there is no difficulty in doing this. We have techniques for doing this like shadow pricing of labour. In certain major investment decisions, the Planning Commission and ourselves do attempt to make such calculations."

2.22. In regard to the procedure followed by the different Ministries/Departments for evaluating the need for computerisation or mechanisation, enquired into by the Committee, the Secretary, Department of Expenditure stated in evidence:

"For non-scientific use of computers, the proposals have to be put up. That is, for installation of computers for statistical and accounting work, it requires a feasibility study to be made to quantify the estimated savings effected as a result of computerisation assuming it could also have been done manually. Sometimes, the actual work could not, in fact, be done manually. If it could be done manually, then it is to be quantified what will be the saving effected as a result of computerisation.

I would say, here, that these savings are only potential savings. These are not savings in the sense of actual savings as per the existing manpower. The general policy of the Government still remains that the computers are not installed to save existing manpower. These are potential savings."

2.23. Explaining, at the Committee's instance, the process of introduction of computers in India, the Secretary, Department of Electronics stated in evidence:

"In the past, introduction of computers was made on the general assumption that computers improve efficiency and enable things to be done quickly. For example, if one takes the enormous amount of information in many of our financial sectors like pensions, provident fund, income tax, customs etc., it is found that it has been extremely difficult to correlate data and find out the impact of various measures. That is why many of these areas have a reputation for tremendous delays; and I do not think that in these areas introduction of computers on a judicious basis could play a very important role without really displacing manpower in the sense we understand it. I talk of displacement of manpower in a completely different context. You can displace manpower in the sense that the entire job could be done on a computer. In advanced countries where labour is very costly, they go in for computers as an alternative not because they want it but because the other option i.e. labour is out of question. We do not have to go in for computers on that basis. We should go in for computers on the basis of specific evaluation and judgment that it makes things possible which otherwise are not possible and saves time or money. It is in this background that we have to look at the introduction of computers in the past whether in Government departments or other places. But one must also say this that the computer companies essentially sell the computers because they are interested in making profit and enlarging their market. Therefore, very often there has been a tendency to buy and use them without a careful-enough study of what the end objectives are and how the computers would fulfil these. That is why in the case of any imported computer system, we have proposed, and this has been accepted by the Cabinet, that anybody who wants to import it would have to come to the Electronics Department and say, "These are the objectives and this is the configuration which we think would meet it." We will see whether that configuration matches the objective and then get quotations. Then we will discuss with the user the ultimate choice of the system in terms of having actual benchmark tests performed, and not go merely by what the manufacturer says. This becomes a more objective analysis. In the past, they did not conform to this (type of pro-

cedure) largely because companies like IBM and ICL were allowed to operate in India; they were offering certain facilities and therefore people felt that these could be useful; and on a general basis, without having a detailed analysis done, went in for what was readily available.

If you want to go into this in greater detail, one has to look at each particular case. But generally, the introduction of computers in the past was done in good faith because that is what was available. Whether that was really the way to go about it is a different matter. That is why we are changing it."

2.24. In a note furnished to the Committee, the Department of Electronics had, *inter alia*, stated:

"The majority of the computers currently in use in the country are largely data-processing machines which support essentially accounting and other book-keeping functions. This was the result of the way in which the computer industry had been promoted by the foreign-controlled companies."

Referring to the above statement, the Committee asked whether the demand for computers in India was largely created by the manufacturers with a view to promoting their sales activities or whether the stage of economic development in the country had reached such a point so as really to need this kind of sophistication. The Secretary, Department of Electronics replied:

"Firstly, about the total scene, I personally do not believe there was a careful-enough planning from the viewpoint of stating that the introduction of computers would be done on a planned basis for that whole sector. Even today requests come to me and we tell them, "This is not the way to do it. You want to introduce a computer at this particular place, but we would like to have a total analysis of your load for over a period of time not only from the point of view of introducing computers at various locations but also various types of terminals, tele-processing facilities, etc. so that we have a proper plan for introduction of computers in the total scene for this purpose and decide whether this would be justified." In the past, that type of planning has not been done. Computers were introduced on a relatively *ad hoc* basis to fulfil specific requirements at that point of time and place. With regard to the second aspect, I would go essentially

by the statement which you just read out that the computers which have been introduced on the Indian scene to a very large extent have been as data processing machines, office equipment and so on. They are unit record machines, IBM 1401 and so on. As I have not gone into the details of each case I cannot really generalise on that. But in many cases, they have been used purely as efficiency-improving office equipment, if one wants to put it that way. One must remember that out of the two computer companies, IBM and ICL which have been operating have really—as their names go—been the International Business Machines which is famous—and International Computers Ltd.—built up their whole activity abroad, in United States, U.K. and in their operations in India through the area of business applications though they have developed capabilities in a variety of other fields also. They have high technology applications in oil, steel and so on. But the bulk of their sales thrust has been in the area of business machines applications; and that is what they have been doing here, because they were operating this programme through refurbishing machines which they brought here, namely, 1401 or unit record system and equivalent by bringing them into India and by renovating them in their plants here. They were essentially bringing in these used machines and converting them to the equivalent of new machines or something like that. This was the bulk of their activity and they were looking out for customers for these. One would have to ask, knowing the cases involved, whether when they (the computers) were introduced, they (the institutions) really needed them.”

2.25. The Committee asked whether in a labour-surplus economy like ours, the use of data-processing equipment could be considered desirable essentially on time-saving and cost saving considerations. The Secretary, Department of Electronics deposed:

“One really has to analyse each application and look at it from this angle. I entirely agree with you that the approach we have to take in this country has to be predicated by the fact that we have abundant manpower and, therefore, we have to use them in the most effective way. I think, this must be the basic philosophy with





2.27. The Committee enquired whether the Department of Electronics had made any study of the areas where a job could be done efficiently by larger labour inputs instead of mechanisation. The Secretary, Department of Electronics stated:—

“As far as we are concerned, we try to make an analysis sector by sector or application by application. What we do is this, suppose, we get a request from the C&AG that in the area of Government's accounts keeping, (i.e. in whole variety of things such as salaries, provident fund, other payments etc.) they are encountering some problems, then we will analyse these we won't do it off-hand as we have to justify it whenever a computer has to be imported for an application. Suppose you do require a vast amount of correlation between many pieces of information and at different places, suppose you have to do this in a certain time frame, you have ways of doing this. One can be that you just have tele-processing facilities to correct the different places and sufficient manpower for this which will make it much faster and more efficient without even labour displacement. But this has to be analysed individually. But I can't make an assertion that you need a computer or you can do without it.”

2.28. Asked whether it would not be in the national interest for the Electronics Commission to review cases where computers had been introduced in the past essentially for book-keeping and other functions, Secretary, Department of Electronics stated:

“We certainly could do that. There is no doubt about it. But our prime effort up to now has been to encourage the use of computers in areas like industrial process control, designing, scientific calculations, inventory control, defence system and so on. These are the areas where the computers have an important role to play. Therefore, our prime thrust has been to promote the use of computers in those areas and also to promote the production of computers in the country to meet the demands of the country.

Until September the question of computers in Government was handled by the Department of Statistics. It is only since September this responsibility has been transferred to us, so that computerisation by Government departments will henceforth come to us, whether it be imported

or foreign. I am not talking of the past. In the past we (Department of Electronics) were concerned only with the import of computers, because it was an item which cost more than Rs. 5 lakhs. From now on we will also control computerisation in Government with regard to purchases of even Indian Systems. With regard to computerisation in the general autonomous public sector, private sector and so on, which really do not come to us at the present moment, we could certainly look into it. It is only a question of availability of men in the Department of Electronics, compared to the number of task on which they are engaged. We could certainly do it, if the PAC says this is one of the tasks which we should undertake."

2.29. The Committee desired to know whether there was any organisation in Government or an inbuilt mechanism for evaluating the performance and assessing the requirement of computers etc. in Government Departments. The Secretary, Department of Expenditure stated in evidence:

"In the governmental machinery there have been two screening processes. In the case of banking, insurance and other activities where there is strong resistance from employees to the installation of computers, we consult the Ministry of Labour about the impact of computer installation before any decision is taken to go ahead with computerisation. In the case of purely statistical work, which may range from the population census to crime statistics, industrial statistics and other kind of work, hitherto the clearance had to be given by the Department of Statistics. But, recently, the technical and, if I may say so, utilisation clearance have been merged and now it has to be given by the Department of Electronics. The process is that a user department prepares its scheme for installing computer facilities, taking into account the complexity of the work involved and the time factor involved. It is necessary to show that the saving of time is essential to that function; there is not merely a cost saving. If it is claimed that 5,000 clerical labour would be replaced by one machine, that kind of argument would not be adequate to justify the installation of computers. I think the hon. Member referred to the sophistication and the complexity of the work involved; did these really make the installation of a computer inescapable. The user department has

to justify the need to the Department of Electronics, who have specialists in hardware and software and discussions are held in which the Finance Ministry takes part occasionally before a decision is taken to instal a new computer."

2.30. The Committee were informed that the Department of Electronics, which was set up in the latter half of 1971, was initially charged with the responsibility for the development of the electronics industry and that the coordination work relating to the acquisition of computers etc. by Government Departments was assigned to the Department only in August 1975, prior to which the Department of Statistics was responsible for the scrutiny of the requirements of computers and data processing equipment by various Government Departments. The Committee asked whether the Department of Statistics had the necessary expertise to perform this coordination work which apparently was of a sophisticated nature, the Secretary, Department of Expenditure, replied:

"The Department of Statistics was certainly equipped to evaluate the requirements of the user departments for installation of computers and also for seeing that computer-time was properly utilised and there was no under-utilisation. The Department of Statistics was not equipped to consider the technological aspects of computer development or computer maintenance, which were the functions assigned to the Department of Electronics and the recent decision of Government is to put these two functions together under the Department of Electronics."

2.31. On being asked whether a part from the technological aspects of computer development or computer maintenance which were the functions assigned to the Department of Electronics the Department of Statistics was equipped to function as a nodal point, the witness stated:

"I have also mentioned that where there were implications as to a choice between the continuation of manual work and installation of computers, and there was a possibility of layoff of existing workers, the Labour Ministry was also consulted."

2.32. When the Committee pointed out that this, therefore, implied that there was no synchronised agency of a sufficiently elevated authority to go into the question of computerisation in different

Ministries/Departments, the Secretary, Department of Expenditure stated:

“I would agree with you. I would only submit that the development of computers in this country is still at a very early stage.”

2.33. As regards, the coordination maintained between the Department of Statistics and the Department of Electronics enquired into by the Committee the witness stated:

“I think in most cases the files would be referred first to the Department of Statistics for clearance of a computer and then the choice of the computer would be cleared with the Department of Electronics.”

In this context, a representative of the Department of Electronics stated:

“If I may add, as I pointed out, the Department of Statistics was the agency to which all Government departments would first refer their requirements, with regard to the computers and also data processing machines as such. Where these could be attained from local resources, the matter was not referred to the Department of Electronics, but where import was involved, the matter subsequently came up to the Department of Electronics. At that point there are very many cases where the Department of Statistics and the Department of Electronics had jointly considered requirements, have sat on the same evaluation committee jointly and came up with decisions.”

2.34. The nature of coordination and supervision exercised by the Department of Statistics in regard to the acquisition of computers and data processing machines by Government Departments is indicated in the following note furnished to the Committee by the Department of Statistics:

“As early as in 1966, the Department of Statistics started functioning as an apex body to coordinate the procurement, allocation and installation of 10 Honeywell computers amongst various Government Departments, including both Public Sector Undertakings, like, the Hindustan Aeronautics Ltd., Oil and Natural Gas Commission and Research Institutions, like the Indian Statistical Institute and Reserve Bank of India. Right from the inception of

the computer Centre in 1967, soft-ware expertise was created initially by conducting training courses on a regular basis in electronic data processing and system analysis and design under the auspices of the experts of Honeywell Assistance Team to India. Some of the officers so trained were recruited to the staff of the Computer Centre, and these officers have put in pioneering efforts not only in offering consultancy and advice on computerisation of the jobs of other Government Departments located in and around Delhi but also in undertaking various system studies for computerisation of certain Government jobs. Subsequently, the Computer Centre had deputed some of its officers abroad for advanced training in Government systems and applications in soft-ware as also an Electronics Engineer for building up hardware expertise."

As a recognition of the achievements of the Computer Centre not only in creating higher potential and much awareness which helped computerisation which helped Government jobs, but also in developing a solid base with experience and expertise in both soft-ware and hardware the Government entrusted the Department of Statistics in 1970 with the responsibility to coordinate the requirements of Government Departments/Agencies in the matter of purchasing/hiring computers (*vide* Cabinet Secretariat O.M. No. 74|2|24|CF-70, dated the 23rd April, 1970). Right from 1970, the Computer Centre has been assisting the Department of Statistics in their duties by examining the proposals through detailed discussions and on the spot examinations of the nature of work, whenever considered necessary. Experience gained by the Computer Centre, while conducting system studies for various Government Department at Delhi enabled them to critically examine various aspects of the proposals submitted. Some of the aspects which were thoroughly looked into included the nature of applications, volumes of input/output, amount of processing involved adequacy of the configuration proposed for the nature and volume of work and the manner in which the different jobs were to be processed on the computer and the extent of utilisation of the resources and the benefits to be accrued through computerisation."

Some of the proposals, which the Computer Centre had examined and furnished its recommendations to procure the

computers, were Indian Meteorological Department, New Delhi, Ministry of Defence (R&D) Organisation, Administrative Staff College, Hyderabad, and the Reserve Bank of India, Bombay. In addition to providing advice and coordination in the purchasing/hiring of computer equipment, the Computer Centre also associated with such organisation as Administrative Reforms Commission, Ministry of Home Affairs, Department of Revenue for the development of improved information systems in an integrated fashion; its officers nominated as members of Expert Committees such as the Automation Committees, Working Group on Electronic Computers, Evaluation Committee of National Computation Centre.

2.35. In a note, the Department of Electronics, have *inter-alia*, stated:

“During the usual financial computations, one normally does not take into consideration the technological alternatives for any given system sold in India. IBM has sold or hired nearly 200 IBM 1401 systems in India. An analysis by IPAG (Information, Planning and Analysis Group) has shown that at the time of installing an IBM 1401 system or ICL 1901 system in the country equivalent minicomputers were available with the same capacity at a cost which was half the cost in 1970, one third the cost in 1972 and one-fourth the cost in 1974. In 1975, a computer slightly more powerful than the IBM 1401 is available at a cost as low as \$ 1200 for a 4000 word memory Central Processing Unit, as compared to the price of IBM 1401 of equivalent configuration of \$ 20,000 or more depending upon the susceptibility of the buyer/hirer.”

Referring to the above statement, the Committee desired to know whether it was on account of the lack of technological expertise or because of negligence on the part of the user Ministries that IBM and ICL systems which were comparatively costlier were acquired. The Secretary, Electronics Commission stated in evidence:

“I would just like to mention to the Committee that until the Department of Electronics and the Electronics Commission were formed in 1971, there really was not an agency of the Government concerned with the development of electronics in any overall integrated way. The electronics industry was handled by the Department of Defence-

Supplies for some period of time. It was also handled for some time by the Department of Technical Development, in the Ministry of Industry. It is only after the Department of Electronics and the Commission came into being that one really had a nodal point in Government where one could look at all the inter-connected technical-economic considerations relating to this particular case i.e. the operations of IBM, the kind of computers that they had inducted, what were the alternative choices available to us, what were the cost implications, what was the extent of restrictive practices operative in terms of the mechanism of sales, service, hire and so on. The policy of the IBM has been pushing of their machines. The first point is that there was not a dedicated examination by a single administrative Ministry. If I may say so, of this question I have had the privilege of being involved in electronics before the department came into being. We have attempted to do—I would not say, we have done and have a look at all aspects of this with industrial licensing, import licensing, technological development, the character of the computer industry, retrieving the control over the computer industry, retrieving marketing control from multinationals to suit national needs etc. That is why, in our reply to your questions on self-reliance, we have drawn attention to the fact that one of the key considerations in deciding what is the best and the direction in which the computer industry should be developed related to Indian needs and opportunities, and not related to the kind of global marketing strategies that multi-nationals traditionally follow. We have been attempting to do it. The first point is phasing out of the programme in 1971, the second element is in regard to import control procedures which we have got. As far as system is concerned, there must be some degree of control. The main point is that we have had to pay substantially more than otherwise would have been the case if we had paid dedicated attention to this area and shown something like the kind of interest and effort that the multi-national themselves put in in terms of their marketing strategies and development.”

2.36. Reacting to the analysis made by the Department of Electronics, the Secretary, Department of Expenditure, however, stated:

“While I was not familiar with this particular analysis, I do

see these figures purport to show that between 1964—1974 electronic data processing systems were available (also imported not indigenous) which could have performed the functions that the IBM systems performed on installation in India possibly at a lower total cost.

My colleague has just pointed out to me that since 1971 all purchases were cleared by the Electronics Commission. Even prior to 1971 the actual installation of systems was subject to clearance, except for scientific computers, by the Central Statistical Office. If, on further examination, this analysis is found to be objectively correct, one must attribute the fact to the aggressive dynamic salesmanship of the IBM in that they were available to explain their systems to the Indian consumers. Secondly, it was due to the lack of enough technical expertise, in individual user Ministries for this purpose.”

2.37. On being asked the reasons for the coordinating agencies in Government like the Department of Statistics, Directorate General of Supplies and Disposals, Directorate General of Technical Development etc., had not cared to find out the details which the Department of Electronics had been able to discover subsequently, the Secretary of Expenditure stated:

“I would like to point out the difference in approaches. Computer systems have been sold and are still sold as a package with what is called soft-ware. The user Ministries, while they have their ideas of what they want, have very diffused ideas of the manner in which data have to be processed, analysed and put up for the management systems or for semi-scientific work such as sociological survey and the rest. IBM and ICL—international computers—have been in a position to supply packages of soft-ware which can be tailored to suit the requirements of the consumer. In these cases the salesmanship consisted of purchasing this complete package of how the job was to be done and persuading the user that this was the best available, if not the only system by which job could be done.

Your point will still be valid if the Central Statistical Office and the Director General of Technical Development, the Electronics side of that, had got together and had done a complete study of each of these cases. They might have



come up with alternative software-cum-hardware package system which could be obtained at a cheaper cost from another source. This kind of service now I trust the Electronics Commission is in a position to offer, but at that time they were not. There was no such arrangement and I think this goes a long way in explaining the decisions to purchase IBM machines. May I say, subject to correction that even after the formation of the Electronic Commission, there are still a number of cases where IBM packages of this sort are preferred by some users to alternative packages because they may be superior and I have made this point on an earlier occasion. I would still make it, for certain usages it is impossible to have superior package from IBM."

2.38. Asked whether the user Ministries often tended to be fascinated by the IBM's public relations gimmicks, a representative of the Department of Electronics stated:

"With regard to this point about computers about which the Committee is concerned, I would like to say this. These IBM 1401 were on a manufacturing programme in India between 1965 and 1969. This was the only manufacturing programme. The users did not have very far to look. As an investment they knew they should have a certain amount of capital for which they have to make a budget provision and they could go in for the computer. About imported brands, after the IBM 1401 programme was phased out, it is true, there was a lot of commercial pushing of the IBM products the world over. Quite a lot of the basic argument in this regard has been to the effect that this computer is one which is most largely used in foreign countries. Whether one looks at the steel sector or oil processing or industrial management, 70 per cent of the machines are of IBM manufacture. Even in regard to astrological forecasts you would find this sort of argument is very much there. And I think for the last 3 or 4 years this has abated. Users are prepared now to look at other systems on an equivocal basis and draw up competitive tenders and so on."

In this context, another representative of the Department of Electronics added:

"There is one reason which is almost a diagnosis and I think there is a very simple explanation. Most users of com-

puters want what I call 'spoon-feeding' IBM specialises almost like a discipline in this sort of spoon-feeding. They did not want us to develop software or hardware in order to integrate into their system. By 1970 the OEM systems were also popular. It may not then be as popular as of now, but OEM's integrated units were being used by many users. I don't think this has got anything to do with any administrative Government Department because users were very much dependent as I said, upon spoon-feeding. This is a thing which we are now breaking. We are telling the users that they should go by their own work and their own effort being superposed on the systems and that would make the position easier as far as purchases are concerned."

2.39. The Committee desired to know whether on the basis of experience of the user Ministries/Departments, the Department of Electronics had made any study of the areas and applications which could be justifiably computerised. A representative of the Department of Electronics stated during evidence:

"Certainly, the Electronics Commission places great accent in those areas which are really process-oriented type of applications, where computers support essential improvements in industrial outputs in terms of controlling the processes, improving the quality of the product and improving the through-out of the process areas. The other areas of control are management of industrial organisations, where the computer is used for scheduling of operations and inventory control. Now, when we consider cases for outlining justification for the introduction of computers, the priorities are based on those applications which really will result in very short-term improvements in the outputs, both in terms of the product quantity and quality as well as in terms of bringing in certain tangible benefits. One area in which the benefits can be very tangible would be inventory control, where one can say that by introduction of computers, one has been able to reduce the inventory, by a certain figure, by a certain percentage. The other area where tangible benefits can be established would be in production environment, where one says that the process inventory, that is, the inventory which is made use of for producing X items is reduced by a particular

percentage by use of computers. We also know that there would be a certain reduction of manpower arising out of the use of the computer, that is over a period the magnitude of the operations will increase, but the intake of manpower will not proportionately increase. This is the basis on which we determine the priorities and accept that certain applications should be brought in."

2.40. A note furnished subsequently in this regard by the Department of Electronics is reproduced below:—

"The Department of Electronics was till late 1975, involved only in cases which required obtaining Government approvals for import of computers into the country. All detailed analysis requiring analysis of their utilisation had, till lately, been done by the Department of Statistics, which was functioning under the Cabinet Secretariat and is now under the Ministry of Planning. The Department of Electronics is now constituting an Inter-Ministerial Committee to study the areas for which computers were obtained by the various Government Departments and also to find out whether utilisation has been commensurate with the envisaged programme, the investment made in the field of Data Processing.

In clearing various proposals for the import of computers into the country, the Department of Electronics takes into consideration the socio-economic impact of computers in the country and encourages computers being utilised in areas which are export and production oriented, conserve resources, fosters R&D and indigenous development and is within the constraint of national security. A list of priority areas of applications is indicated below:—

- (a) Requirements of vital sectors as Defence;
- (b) Export-oriented applications;
- (c) Applications of national importance in priority sectors as Agriculture, Energy, Oil, Transportation, Steel, Coal etc.
- (d) Regional Planning Applications for State Governments and Regional Centres;
- (e) Production-based and Resources utilisation applications in Industry;

- (f) Scientific, Industrial and Engineering Research and Development;
- (g) Higher-level Computer Training;
- (h) Other Commercial applications contributing to efficient management."

2.41. The Committee note the conflicting views regarding factors motivating the introduction of computers and other data-processing equipment in various organisations. Reconciliation between these divergent views is, perhaps, a difficult task, particularly when the subject of computerisation itself is a complex one, often even shrouded in an aura of supratechnological mystery. The Committee found, for instance, that "computers were introduced in many cases as mere status symbols and to keep up with the 'Joneses', and not with any clear-cut and calculated assessment of its benefits as an effective management tool." An expert body looking into this question of Automation (1972), pointed out that the aforesaid criticism was "not altogether unfounded", and added that 'even where the computer was introduced in order to obtain specific advantages, in most cases it was still not being efficiently used as an adjunct to a well-designed management-information system'. Another study sponsored by the Administrative Staff College, found, however, that the computer 'does not constitute a status symbol in the user organisations'.

2.42. In so far as the introduction of computers and data-processing equipment in Government departments is concerned, it would appear from an analysis of the evidence discussed in the preceding paragraphs that, barring a few cases where computerisation was inescapable on account of the complexity of the applications, (as in the case of the Department of Space or the Telecommunication Research Centre) computerisation had been generally resorted to on a relatively 'ad hoc' basis without even any serious cost-benefit analysis and on an 'a priori' assumption that such equipment would improve the efficiency and speed of data-processing. Some Ministries and Departments such as the Department of Defence Production, the Planning Commission, India Meteorological Department, Directorate General of Supplies and Disposals, Central Bureau of Investigation, etc. have claimed that they had attempted some kind of a job analysis before going in for computers. The reasons offered by them are, however, essentially the somewhat routine arguments advanced by any organisation going in for sophisticated electro-mechanical gadgetry, namely, that such equipment would improve

efficiency, enable the handling and processing of a large volume of data with ease, speed and reliability, and facilitate their efficient storage and retrieval. It would also be seen from the later chapters of this Report that many of the Ministries and Departments have not even been in a position to quantify, in concrete terms, the benefits expected to accrue from computerisation, their replies in this regard being in general terms and rather vague.

2.43. The Ministry of Information and Broadcasting alone among other sister organisations, have unequivocally conceded that no job analysis as such was done before acquiring the data-processing equipment for the Commercial Broadcasting Service and Audience Research Unit of All India Radio. While data-processing equipment had been acquired for the Commercial Broadcasting Service 'as per the instructions' of the Minister and the Secretary of the Ministry, the equipments for the Audience Research Unit were purchased 'to cope with the heavy tabulation work coming up at various Audience Research Units as a result of reorganisation of Audience Research'. The fact that the equipments acquired by the Commercial Broadcasting Service have not been put to use even two years after installation would indicate that there was obviously no genuine assessment of requirements, a default which the representative of the Ministry was good enough to acknowledge before the Committee.

2.44. The Committee have learnt from the Department of Electronics that the majority of the computers currently in use in the country are largely data-processing machines which support essentially accounting and other book-keeping functions, and that this had been the result of the way in which business in India had been promoted by the foreign-controlled computer industry. Some of the applications computerised in government departments lend clear support to this view. This is also generally corroborated by the study sponsored by the Administrative Staff College according to which, the Indian Management is, by and large, 'not very clear about the overall objectives of computers and, in many cases, computers were acquired with a view to dealing with the immediate and specific problems'.

2.45. It would appear that at least in the initial stages, computers had been promoted by the companies essentially as business machines and efficiency-improving office-equipment and that in the selection of applications for computerisation and in the choice of a particular system or configuration, there had not been any positive understanding of the objectives sought to be achieved by computerisation or a scientific evaluation of how far a particular system or

configuration would subserve the objectives envisaged. For instance, the Director of the Central Bureau of Investigation has deposed before the Committee that at the time of hiring the equipment, it could not be anticipated whether all the machines would be required. This is indicative of grave deficiency in working out the requirements.

2.46. Computers had been introduced in government departments in the past to fulfil, no doubt, certain emerging requirements, but it was done without objectively evaluating the overall needs and 'without a careful enough scrutiny of what the end-objectives are and how the computers would fulfil these'. The system acquired by the Registrar-General of India is a case in point. The Committee find that an elaborate system comprising an IBM-1401 computer and both IBM and ICL peripheral equipment was acquired by the Registrar-General for the processing of Census data with a view to achieving efficient storage, reliable retrieval uniform cross-classification, economy and speed. It is just not clear to the Committee why for what is apparently a one-time application it was necessary to acquire the equipment when this work could, perhaps, have been got executed through a centralised computer agency such as the Government Computer Centre.

2.47. In many cases, apparently, the choice of the system of configuration had also been largely left to the supplier firms like IBM, who specialised in what has now been diagnosed by the Department of Electronics as the 'discipline of spoon-feeding'. All India Radio and the Registrar General of India left the task of designing the system almost entirely to I.B.M. engineers whose main thrust had been in the area of business applications rather than the purposes aimed at by Government. There are repeated instances of Government departments going in for equipment which was readily available, but they were lured, as it were, by the ready-made packages of hard-ware and soft-ware offered by the foreign-controlled companies operating in India. Thus, the systems acquired had not been designed to suit our individual user-requirements, but whatever was readily available with the manufacturers were virtually thrust on this country on account of the sophisticated and alluringly aggressive salesmanship of IBM in particular and the comparative technical inexperience of our individual users. This appears to be particularly true in the case of the IBM-1401 series (of which there is a peculiar proliferation in government departments), which, by the time they were brought into India on an 'As is' basis and re-furnished for being supplied to various users, were entirely obsolete and had outlived their utility elsewhere in the world.

2.48. The Committee have also been informed by the Department of Electronics that while working out the financial implications of computerisation, the technological alternatives had not been critically gone into. The analysis made in this regard by the Information Planning and Analysis Group (IPAG) of the Electronics Commission is revealing. The analysis has shown that at the time of installing an IBM 1401 system or ICL 1901 system in the country, equivalent mini-computers were available with the same capacity at a cost which was half the cost in 1970, one third the cost in 1972 and one-fourth the cost in 1974. In 1975, a computer slightly more powerful than the IBM 1401 was available at a cost as low as \$ 1200 for a 4000 word memory Central Processing Unit, as compared to the price of IBM 1401 of equivalent configuration of \$ 20,000 or more. Thus, it would appear that little or no attention had been paid in the past to this important aspect which could have, perhaps, resulted in the acquisition of equally capable equipment at much lesser cost.

2.49. The Committee would like to draw pointed attention to the thoughtful and perceptive observations made by the representative of the Department of Electronics in his evidence before the Committee:

“The main point is that we have had to pay substantially more than otherwise would have been the case if we had paid dedicated attention to this area and shown something like the kind of interest and effort that the multinationals themselves put in terms of their marketing strategies and development.”

2.50. In evaluating the need for computerisation, the Committee feel that it would be wrong to ignore another aspect which is the social cost of computerisation as well. While the Committee are sensible that our country must take every possible advantage of modern scientific advance and technological innovation, they would stress that in an economy such as ours, where the problem of unemployment is large scale and of serious proportions, the use of computers and other sophisticated machines for traditional labour-saving applications may not be desirable or even expedient. The common argument that computers lead to efficiency which in turn leads to profits, larger savings and faster economic growth is, perhaps, valid only from a long-term point of view, while the use of computers for predominantly labour-saving applications can well result in contracting the employment opportunities. It is unfortunate that adequate attention has not been paid to this important aspect in the past. The Committee desire that Government should

**invariably taken into account the social cost of computerisation and evolve a principled and positive approach for the selection of areas for computerisation on an over-all judgment in the national interest.**

**2.51. What causes grave concern to the Committee is that, prior to 1970, there was no clear institutional mechanism within Government for coordinating the computer requirements of different Government departments/agencies and even for evaluating the justification for computerisation. The absence of an explicit policy-frame and well-defined criteria in regard to the areas and applications in which computers could and should be introduced further aggravated the situation. Even after 1970, the Department of Statistics, entrusted with the responsibility of coordinating the purchase and hire of computers by Government departments, and of evaluating the requirements of user departments and ensuring proper utilisation of computer time, was, as pointed out earlier, not adequately equipped to consider these technological aspects. Now that the Department of Electronics has been entrusted with most of these vital responsibilities as a unifying agency, the Committee trust that there would be a more integrated and coordinated approach towards the entire question of computerisation in Government departments.**

**2.52. The Committee are unable to appreciate why the responsibility for scrutinising requests for computers could not be entrusted to the Department of Electronics some years earlier as this Department had come into being in 1971. Moreover the Department of Electronics had already been entrusted with the responsibility for scrutinising the applications for import of computers into the country and this could have easily been extended to cover scrutiny of requirements for purchase/hire of computers by Government departments public undertakings from the multi-nationals functioning in the country. Had this been done there would perhaps have been a truly knowledgeable and critical scrutiny to ensure that the computers were purchased only where indispensably required in the larger public interest and also on the most competitive rates.**

**2.53. The Committee find that the Department of Electronics has so far been designated as the nodal point for scrutiny only in respect of Government departments. The Committee stress that all requests for introduction of computers above a certain value, whether in the public or private sector, should be got scrutinised by the Department of Electronics which has the requisite expertise to make sure that such computerisation would subserve the larger public interest.**



2.54. The Committee are glad that the Department of Electronics are no longer just content with accepting the merits of a readymade machine which the Multi-nationals successfully marketed through their usual deft salesmanship, but are now trying seriously to identify the areas and problems where the use of the computer would really be an aid in taking correct decisions after evaluating all the complex factors. Since the user Departments have hitherto got used to a certain amount of what might be called spoon feeding by the Multi-nationals, it is necessary that a close watch is kept centrally by the Department of Electronics to ensure that the Departments identify precisely and carefully the problems and areas proposed to be tackled by computerisation and also spell out the benefits which would accrue from computerisation.

2.55. As regards the criteria to be followed for the scrutiny of computerisation proposals from different Government departments, the Committee note that certain broad principles have now been evolved by the Department of Electronics, and that certain priority areas of applications which are export and production-oriented and would make for conservation of resources, foster indigenous development and R & D, etc. have been indicated.

According to Government the use of computers is primarily to be made in industrial process control, designing, scientific calculations, inventory control, defence system etc. Computers are also envisaged to be used for the process-oriented type of applications where they support essential improvements in industrial outputs in terms of controlling the process or improving the quality of the product and improving the through-put of the process areas.

In sum, the Committee would like a more precise policy and objective criteria for computerisation in Government Departments to be evolved soon by the Department of Electronics so that a national line on this issue could be laid down for principled implementation.

## CHAPTER III

### ACQUISITION OF COMPUTERS

#### A. Purchase Procedure

3.1. According to the General Financial Rules and the provisions of the Manual of the Director General of Supplies and Disposals, all stores with the exception of certain specified categories, and those items which are specifically exempted from the scope of the Director General of Supplies and Disposals by the Government from time to time, are required to be procured through the Central Purchase Organisation of the Director General of Supplies and Disposals where the value exceeds the direct purchase powers delegated to the indenting Departments. Computers and allied equipment do not figure in the exempted list and are therefore required to be procured through the Director General of Supplies and Disposals.

3.2. Rate Contracts are concluded by the DGS&D for such stores as are of standard type other than those required in small quantities, which are in common and regular demand by a large number of indentors and the price of which is not subject to appreciable market fluctuations. Computers and accessories such as card punches, verifiers and sorters, are not on DGS&D Rate Contracts. In view of this, even though the indenting officers may not be able to purchase them by direct placement of Supply Orders under any Rate Contract, they are required to raise indents on the Central Purchase organisation and the absence of any such Rate Contracts does not confer on them any purchase powers in excess of the prescribed monetary limits.

3.3. The Committee called for detailed information about the procedure followed by Ministries/Departments in regard to the acquisition of computers and data processing equipment. An analysis of the information furnished by the various Ministries/Departments reveals that the computers/data processing equipment were not procured through the DGS&D by the undermentioned Ministries/

## Departments for the reasons indicated against each:

Ministries/Departments	Reasons for not procuring through DGS&D
1. Planning Commission	The equipment was procured from the IBM, by the Ford Foundation, payment for which was made by the Ford Foundation directly in the U.S.A.
2. Department of Space	The Department is exempt from processing its purchases through DGS&D on the analogy of the Department of Atomic Energy. As such, the computers were not acquired through DGS&D.
3. Department of Personnel & Administrative Reforms	
(i) Union Public Service Commission.	The data processing machines were not purchased/hired through DGS&D because there was no DGS&D rate contract for these machines.
(ii) Institute of Secretariat Training & Management	There being no DGS&D rate contract, these machines were purchased/hired from I.C.L.
4. Ministry of Home Affairs	
(i) Registrar General of India	The Computer was hired and not purchased.
(ii) Central Bureau of Investigation	The equipment was not purchased but was taken on hire. In the case of hire, it was not necessary to consult the DGS&D.
5. Department of Statistics	
Computer Centre, New Delhi	The Computer system were acquired at a concessional price which was negotiated by the Department of Economic Affairs.
6. Ministry of Agriculture	
Department of Economic & Statistics	The DGS&D was not consulted in the matter. The machines were acquired after obtaining the quotation from both the ICL and IBM which were the only companies supplying mechanical data processing equipment in India, as these machines were not under the rate contract of the DGS&D.
7. Ministry of Commerce	
(i) Department of Commercial Intelligence & Statistics.	There is no rate contract entered into by the Government of India with the two firms viz. IBM and ICL either for hiring the data processing equipment or their purchase.
(ii) Chief Controller of Imports & Exports	These were specialised machines and as such an order was placed direct.
8. Ministry of Communications	
(i) P & T Board	Since this was a scientific equipment it was not processed through DGS&D, but global tenders were obtained directly by the P&T Department.

Ministries/Departments	Reasons for not procuring through DGS&D
(ii) Overseas Communications Service	Hiring of machines was not required to be done through the DGS&D. Therefore the machine were hired departmentally.
9. Department of Defence Production	Hiring of Data Processing Machines was not done through DGS&D.

3.4. The Committee also enquired whether competitive tenders were obtained by each Ministry/Department before purchase/hire of data processing equipment, and if not, the reasons therefor. The replies furnished by the Ministries/Departments on this point indicate that in some cases quotations/tenders were obtained from the two firms viz. IBM and ICL. However, in most cases, the equipment was acquired only from IBM/ICL on the grounds of the equipment being proprietary in nature. The Committee desired to know the implications of a 'proprietary item', the agency competent to decide whether an item was proprietary or not and whether in the case of proprietary items it was not necessary to call for competitive tenders quotations. In a note on the subject the Department of Supply have stated:

"The implication of a proprietary item is that from the point of view of user's requirement the head of the indenting department furnishes a certificate that the item covered by the indent is manufactured by a particular firm and that no other make is acceptable to him for reasons specified. The certificate is issued after concurrence of the indenter's associate Finance. Once a proprietary article certificate accompanies an indent, only the source(s) indicated is sent the tender enquiry."

3.5. Referring to the cases where the Ministries Departments had not involved the Director General of Supplies and Disposals on the ground that the item to be produced was of a proprietary nature, the Committee pointed out that this could well be attributed to the aggressive salesmanship of the supplier firms who might have persuaded the user Department to believe that a particular item was an exclusive item which nobody else was producing. The Committee asked whether that represented a lacuna in the procedure.

The Secretary, Department of Supply replied:

“Even if there is a proprietary article certificate given by the indentors, it is his bounden duty to give that certificate to the DGS&D and request DGS&D to make the purchase. Under the existing rules, there is no question of somebody just going and buying directly something because it is a proprietary item.”

He added:

“All indents for proprietary stores should be placed with the approval of the Head of the Department or his duly authorised nominee and this should be in consultation with the Ministry of Finance. They must get the concurrence of their associate Finance for the purchase of the proprietary item before approaching DGS&D. They must satisfy their finance first. It is only after such a certificate concurred in by their associate Finance comes to DGS&D, DGS&D goes for a single tender enquiry; otherwise it is necessary for DGS&D to go in for an open tender and invite tenders from all parties.”

The Secretary, Department of Supply confirmed that wherever the Ministries/Departments had not sent the proposals for acquisition of data processing equipment to the Director General of Supplies & Disposals on the plea that the equipment was of a proprietary nature, a wrong procedure, had been followed.

3.6. The Committee were informed that on the analogy of the Department of Atomic Energy, the Department of Space was also exempted from consultations with the Director General of Supplies & Disposals for the purchase of their equipment. Asked about the reasons for this, the Secretary, Department of Space stated during evidence:—

“Earlier, the Department of Space was under the umbrella of Atomic Energy. When a Government decision was taken to separate it, the specialised nature of the work and the activities concerning space were considered by Government. The Government decided that in this particular area because of the specific nature of the electronic activity already having been organised and centralised in the Department of Electronics, and because of the specific of the activity, it was not necessary to get clearance from

DGS&D, in the usual manner in which it is done for the various departments. It does not mean that we operate in a fashion which is independent of the country's general policy. Every activity is examined in a systematic manner. With regard to the purchase of computers, there is not a single case where the computers were not cleared by the Department of Electronics."

3.7. From the information furnished to the Committee by the Department of Space it is seen that for the computers and other equipment purchased from the IBM, no competitive tenders were obtained as these were proprietary items and they had been purchased on the basis of policy decisions by the competent authorities. The Committee desired to know whether at the time of acquisition of these items, there was no other choice except to go in for IBM equipment. The Secretary, Department of Space stated in evidence:

"At that time this was the position that there was a particular need for which the computer was required and choices were limited and there was no other choice. The proprietary element was even at that time known to the Atomic Energy Commission which thought that we should not get from IBM any main processing system on hire but purchase it outright and then bring it under our control."

3.8. The Heavy Vehicles Factory, Avadi (Department of Defence Production) hired data processing machines from IBM and paid a sum of more than Rs. 14 lakhs towards hire charges during the period from 1967 to 1973. On being asked why these transactions were not processed through DGS&D, the Secretary, Department of Defence Production stated in evidence:

"When one purchases equipment, under the rule one has to go to the DGS&D. For hiring, it is not necessary to go to the DGS&D. But in every case, specially in the case of HVF we did appoint a committee, who did go into the offers of ICL and IBM. It was extensively enquired into and the choice fell on IBM, because of technical reasons which were then held to be valid."

He added:

"There is no question of relaxation of the procedure. Because we are hiring, therefore, going to the DGS&D is not necessary. In this Heavy Vehicles Factory case, the Committee consisted of the General Manager assisted by the

Ministry of Finance as well as people from the DGOF and they went into the respective offers which were received and also to see if the systems that were offered were compatible with the working of the Heavy Vehicles Factory and they came to the conclusion that the IBM system was definitely better."

3.9. The Chief Controller of Imports & Exports purchased data processing machines direct from IBM. In this connection it has been stated that "these were specialised machines and as such an order was placed direct. However, later on *ex-post-facto* approval was accorded by the Ministry of Finance." When asked why the purchases were not made through the agency of the DGS&D, the Secretary, Foreign Trade explained during evidence:

"I must frankly admit that CCIE did not consult DGS&D in the purchase of this item. He had been under the impression—which I am now willing to accept as mistaken—that purchases of this type were within his own powers. In fact this had been the stand which our Ministry had taken consistently whenever audit pointed out the irregularity involved. Both CCIE and the Ministry had taken the stand that this could be purchased without going through DGS&D as this was a proprietary item above Rs. 5 lakhs. But now I am willing to accept that even though it was a proprietary item, he should have obtained relaxation from DGS&D."

3.10. In reply to a question whether the Ministry of Finance was consulted in the matter, a representative of the Department of Expenditure stated:

"While Finance is certainly concerned in those matters, since there is a central purchase agency which has been charged with the task of procuring various items for the Government as a whole, instructions had been issued by them on that subject and if a particular Ministry has not followed the orders, it was a mistake on their part. In such cases the only remedy available is to tell the Ministry that they have gone wrong. That is what has happened in this case."

3.11. In the same context, the Secretary, Foreign Trade stated:

"When we wanted to purchase machines for CCIE we had taken the concurrence of the Ministry of Finance and the

concurrence was conveyed to us after getting the approval of the Minister himself. In fairness to the Ministry of Finance, I should say here that financial concurrence means concurrence for incurring expenditure involved in it. It does not extend to the machinery that we should follow, the procedure that we should follow in the matter of the purchase; Finance was really out of it. Under the bonafide impression that this was a proprietary item and could be purchased directly, we did not go to the DGS&D for relaxation and we made the purchase. In doing that we certainly did not have to consult Finance because we thought we were doing the right thing."

He added:

"We have obtained the sanction from our associate finance for incurring expenditure for the purchase of the machinery and we were acting under valid sanction from the Ministry of Finance. The next point was actual placing of the order on the IBM. Looking back, we should have obtained relaxation from DGS&D for making the direct purchase; we did not do so because we were under the impression that we had the power to do so. Therefore, the Finance Ministry was not asked to give any concession or relaxation of the rule."

3.12. Since no uniform procedure appeared to have been laid down or followed for purchasing or hiring of computers and other data processing equipment with some Departments acquiring such equipment through the DGS&D and others dealing directly with the supplier firms, the Committee asked whether it was not desirable to have a uniform procedure in the interest of economy and efficiency. The Secretary, Department of Supply stated:

"In regard to hiring, actually this has not been assigned as a function to the Department of Supply or the DGS&D. We have Rules of Business in which it has been very specifically spelt out that it is only the purchase, inspection and shipment of stores for the Central Government and other than those items, the purchase, inspection or shipment of which are specifically delegated to other Ministries, that fall within the responsibility of the Department of Supply. So, in regard to the hiring, the DGS&D or the Department of Supply have no function. As an example, I would place before the Committee that



we have several cases of hiring like the hiring of staff cars and other transport, air-conditioning equipment, etc. in which the DGS&D or the Department of Supply have no role to play whatsoever. So, we are not really even given an opportunity in this because it is not stated to be our function."

"In regard to purchase definitely the function has been assigned to the Department of Supply and DGS&D, its attached organisation. Purchase is something where a definite skill in the shopping aspect, in the buying aspect, involved and this skill is something which the DGS&D has acquired over the years.

There is another aspect in purchase... namely, there is the aspect of the sophistication involved, the kind of specialisation. For this purpose, what the DGS&D does is that he marries the two skills together by associating with the purchase process the specialists from that Department. No purchase of sophisticated equipment like computer is made by the DGS&D without closely associating the specialists or experts from the Department concerned."

3.13. When the Committee pointed out that in a number of cases of acquisition of computers and data processing equipment, the Ministries Departments had not consulted DGS&D, the Secretary, Department of Supplies stated:

"I would submit that this particular purchase that has been done by the Departments without associating the DGS&D or by themselves doing it, is totally incorrect as per the General Financial Rules. The Rules say that, barring the above exceptions—and exceptions have been given—all other items shall be purchased through DGS&D. So, whichever Department has purchased directly without letting the DGS&D know about it, has done something that is not strictly according to the rules laid down on the subject."

3.14. In this connection the Secretary, Department of Expenditure deposed:

"The position, as stated by... (Secretary) Department of Supply, is correct. In all these cases, either the purchases should have been made through the DGS&D under the rules or specific exemptions should have been sought from

the Government for not purchasing through the DGS&D. Without going into each case, I am not in a position to say whether there have been cases where these rules have been infringed, that is to say, purchases have been made directly without the specific approval of the Government that purchases could be made directly."

He added:

"In respect of hiring, no irregularity would have been committed. The Committee may well feel that those rules are inadequate, but no rules have been infringed if hiring has been done directly."

3.15. Since hiring was apparently resorted to with a view to avoiding generally the so-called disadvantages of outright purchase and though technically the DGS&D was only concerned with purchase transactions, the Committee asked whether it would not be desirable to involve the DGS&D in the hiring transactions also. In this connection the Secretary, Department of Supply stated:

"As far as the functions go, I would like to say that we may desire to do a lot of things, but unfortunately we have no authority to do things which have not been assigned to us. In my own judgement, hiring is also something closely linked with purchase and I may want to step into hiring for other Ministries, but it is something that I am not permitted to do. I have no authority to do something for which there is no assignment of duty on my part. Therefore, in respect of the first part, I would like to submit before the Committee, that so long as the task is not assigned to us, it would be difficult for us to encroach into something which would be the right of the other Ministries.

Secondly, since you have very kindly asked me as to what my own personal view is, I would agree with the hon. Member that there should be a link-up between the hiring activity and the purchase activity and that it would benefit the one or the other activity if both are allowed to be done by the same organisation. But, again, the very question raised by the Chairman namely, what would you do in regard to sophisticated equipment, provides the answer. So long as the equipment is highly sophisticated, the individual Departments may have their specific requirements. For instance, in computers, it is common knowledge that

there are computers which have very specific functions to perform; those which are used in scientific research are not really the kind of computers that would be useful to a Department like the Auditor General's office. Therefore, it may not be easy for a Department like Supply to know the specific requirements of another Department. There seems to be some advantage in allowing the hiring part at least to the Department concerned. But my limitation is a functional limitation. I have no authority to hire a computer for another Department."

3.16. As pointed out in paragraph 1.8, out of 217 computers installed in India as on 1st August, 1974, 143 computers, constituting 66 per cent of the total, were provided by IBM and another 13 per cent were supplied by ICL. The details of the data processing equipment acquired by various Government Departments given in Appendix I further reveal that the bulk of the equipment had been purchased/hired from IBM/ICL. The Committee enquired into the rationale behind this virtual dependence on IBM/ICL for the requirement of these equipment. The Department of Supply have in a note stated:

"As the decisions to hire from IBM have been taken by the various Ministries Departments the DGS&D is not aware of the rationale. It is possible that since for merely hiring equipment it is not necessary to raise an indent on the Central Purchase Organisation, the Ministries/Departments concerned have been holding discussions direct with the firms concerned. As the decisions to hire have been taken in the Ministries Departments concerned, the Government in the Ministry of Supply has not had any occasion to examine the question of hiring Vs. purchase or of choice of system."

3.17. During evidence, the Committee desired to know the reasons for the almost total dependence on multinationals like IBM and ICL for the DGS&D, as a Central Purchase Organisation, not having made attempts to explore the market in socialist countries like the USSR for the country's requirements of computers and other data processing equipment. The Secretary, Department of Supply explained:

"Perhaps the department of electronics could give a comparative assessment of the computer technology and the sophistication achieved in different countries. As far as the

Department of Supply is concerned, we generally go out for open tenders wherever there is no insistence on proprietary article certificate. From the list of purchases that have been made through DGS&D I find that except in one case in every case there is a proprietary article certificate with the result that we have no option. Under the rules we are not allowed to go somewhere else when there is a proprietary article certificate which is certified by their associate finance. There is only one instance where we did go on a limited tender enquiry and on that we had no quotation from any East European or socialist country."

3.18. On being pointed out in so far as purchases of equipment was concerned there appeared to be hardly any effort to obtain them from the socialist countries, the Secretary Department of Supply stated:

"I should submit that in respect of machine tools of which I am personally aware, we have purchased a lot of them from the socialist countries. In most of our public sector enterprises the machine tools are from Czechoslovakia and Russia and other socialist countries."

3.19. On the question of acquisition of computers by the Department of Space, the Secretary, Department of Space stated during evidence:

"The distribution of computers with us covers six countries, including India. We undertook quite some time ago, when the needs were forecast that computers will be required for space research to specifically develop a project with the Electronics Corporation of India which is the only Indian Public sector concern making modern computer systems, and I am glad to tell you that the result has been quite satisfactory. They have not only been able to produce a computer system which of course we utilise directly for our purposes but this process has got them started into making these computers for other people within our country. We have four computers from the Electronics Corporation of India and from IBM we have four. We have two general purpose computers which are medium sized at the Physical Research Laboratory at Ahmedabad, and there is a second installation at Trivandrum, at Thumba we have one from France. Here, again, this is an exercise which we discussed in detail with the Department of Electronics

that it would be useful to buy a computer for our space needs—not merely choosing what is the best available in the world but something which is compatible with our needs and also similar to one which the Electronics Corporation of India have purchased. We have one of this type which is a French computer; French credit was available and we preferred this to anything else at that time. This is a recent acquisition. We have very recently also acquired one from Hungary viz. Metrimpex and this is again a special purpose computer. One of our activities is to survey natural resources through satellites. The data we get needs very special processing to be able to distinguish between the agricultural crops of different kinds. We get the information in electronic form and in order to get specific details out we have to use computer processing. This is a very interesting and a very good computer which we have purchased from Hungary. We have one which we obtained from the USSR, but this was a gift to the Thumba Equatorial Rocket Launching Station and it started functioning in the early Sixties—in 1964-65. That completes the list of 15 that we have.”

3.20. During evidence the Committee asked the Secretary, Defence Production, why there was so much dependence on IBM and why no global tenders were called by them. In this connection the Committee pointed out that as far back as in 1965 the P&T Department had imported a computer from M s Elliott Brothers and did not rely only on IBM or ICL for their requirement. The Secretary, Defence Production stated:

“We had the first computer in 1962. At that time IBM was the only machine that was available. But in so far as the later up-dating and acquisition of other computers is concerned, we took into account the availability of ICL systems. We made evaluation of these two types. This was done by technical committees. We chose the IBM computer on a clear appreciation that it offered facilities which ICL could not.”

He added:

“I must say in the Defence Science Organisation where dedicated computers are used we have other makes than IBM including TDC and Elliott.”

3.21. The Committee enquired why the Ministry of Defence had not considered the acquisition of Soviet computers, despite particularly friendly Indo-Soviet relations and the fact that such equipment could also be had on rupee payment. The Secretary, Defence Production explained:—

“When we were choosing the Soviet computers in the range of applications which we had in mind that sort of computers were not available but the Electronics Department might be able to tell us better.”

3.22. A representative of the Department of Electronics stated:

“There has been an information gap with regard to availability of computers from the Soviet Union and when the Electronics Commission came into being in 1971 one of the first things that happened was that a delegation of experts visited the Soviet Union and other socialist countries to find out the status of the computer industry in those countries and arising out of that there have been certain new ranges of Soviet computers, namely, R 1030s which have come into India. About six such computers have been installed and we have a programme of generation of software in India for use in Soviet Union.”

3.23. The Committee were informed by the Secretary, Ministry of Communications that when the P&T Department invited global tenders for acquisition of a computer, tenders were also received from IBM. IBM had, however, quoted a higher amount of Rs. 13.5 lakhs as compared to Rs. 11 lakhs at which the computer was acquired from Elliott Brothers. Asked whether it was the experience of the P&T Department that by inviting global tenders better terms could be obtained, the Secretary, Ministry of Communications stated:

“Yes, Sir. The other point is, in the Telecommunication Research Centre, we were confident that we had the expertise to run the machine even if it was purchased outright, even though Elliott did not have any office in India to give us supporting maintenance assistance. This computer is now being used for almost twice the time for which it was being used when we purchased it. Our engineers are running it very well and it is giving very good service.”

3.24. The Committee desired to know why the Overseas Communications Service which also functioned under the Ministry of Communications did not call global tenders for their requirements of data processing equipment as had been done by the P&T Department. A representative of the Ministry of Communications stated:

“In the case of P&T Department, it was a computer. In our case, only unit record machines were required and they are available in India from manufacturers under licence from Government. They were Indian goods to us and we did not think it necessary to go in for global tenders, it would have been necessary to seek foreign exchange sanction in case of global tenders. We go in for foreign exchange only when Indian material is not available.”

3.25. In reply to a question as to why only IBM machines were preferred, the witness stated:

“There were two units in India who were offering machinery performing these functions and they were IBM and ICL. There was no other organisation offering for sale in India unit Record Machines, to the best of my knowledge in 1971-72. Between the two, we certainly did take care to examine the merits of each make of machine, and we found that the IBM machines were better. The purchase price of the lot received by us was the same in both cases. After that, we found that if we hire the machine, it would be better. ICL people were manufacturing machines which were mechanically operated and not electrically operated. Our preference was for an electric machine on technical grounds. Therefore, we took the IBM machine.”

3.26. The Committee enquired whether apart from IBM and ICL other sources were now being tapped for meeting the country's requirements of computers and data processing equipment. The Secretary, Department of Electronics stated in evidence:

“In a way, I can answer that in the affirmative. We are not dependent on IBM. One of the aspects for which I would like the Department of Electronics to take credit for, is the fact that in spite of these companies having existed in India for a long time with all its ramifications, by which they can exercise sales pressure and so on, if you look at the systems that have come into the country over the

last few years, you will see and appreciable number of non-IBM and non-ICL computers. The list which we will give you will show what type of computers have come in after 1971 after clearance by the Department of Electronics. Since 1971, where IBM computers have been cleared by us for import they have been for specific applications and I can give you an instance. The ONGC wanted a computer for their ship doing seismic prospecting, in connection with off-shore oil exploration. We did a complete analysis and found that for that application the best computer that was available in the world was the IBM system. We have authorised its purchase by ONGC. We could thus like to do a job which is nationally most effective, namely, to find a system which is most suited, and available at the *minimal* price for that purpose. You will find that now we have a broad-based mix of maxi-computers, which include Soviet computers, East German computers, French computers, British computers, American computers, the latter not only from IBM but also from the Digital Equipment Corporation and from Burroughs etc. throughout the country."

3.27. The Committee desired to know whether the Ministry of Finance had laid down any criteria or guidelines in regard to purchase of computers and data processing equipment by different Government Departments. The Secretary, department of Expenditure stated:—

"No such guidelines or general instructions were issued on the point."

3.28. In regard to the checks and balances exercised by the Ministry of Finance, enquired into by the Committee, the Secretary, Department of Expenditure stated:

"It is a subject for the scientists with a great deal of expertise which we do now have. I should, however, point out that in every case where a computer is installed, advice has been taken from the experts of that Ministry. It is not that the Railway Ministry or the Census Commissioner installed computers without the advice of their technical experts who were also at that time considered to be adequately qualified. If we now consider that they did not have enough knowledge of computer technology or that they did not know computer software well enough and they allowed themselves to be spoon-fed by IBM salesman, the Finance Ministry was certainly in no better position to



adjudicate, between one proposed computer system and another. So, I think I owe it to my predecessors in the Finance Ministry to make the point that we have also gone by expert advice which perhaps may not have been the best possible advice."

3.29. When pointedly reminded that one should learn from the mistakes which happened in the past and also try to find out the circumstances in which certain lapses actually came about, the witness stated:

"You have used the word "lapses". Let us go back to the year 1968, when the IBM computer was hired. At that time a case was put up and that was examined and a decision was taken. By hind sight or better analysis now we say that if in 1968 a suitable group of computer specialists had been got together to analyse the alternative software systems and then gone out to a world bid and taken an Italian or British computer, we might have saved 50 per cent of the money over this period. It is in that way that the Committee notices a lapse. If that is so, I think this must be true, but the amounts involved though substantial were not so large that in every case it was necessary for such an elaborate procedure to be adopted to find out possible alternative world sources."

On the point at issue, however, he added:

"I can give that assurance quite clearly on behalf of the Ministry and Government generally, and I believe that we have gone a long way in setting up a centralised system. From what we have learnt from the deliberations of this Committee over the last four days, I think it would not improve matters if we again went back to a tendering system through the DGS&D which would not have the necessary expertise any more than the user Ministries have to determine the best computer system. Since the selection of the computer system is to be done through the centralised agency of the Department of Electronics, the only thing that would then remain is to determine the price and the legal terms of the contract which are not very major matters, on which advice is readily available to every Ministry. The best course would be for the purchase to be made directly by the Ministries in consultation with the Department of Electronics."

### B. Hiring Vs. Outright Purchase

3.30. It has been stated by the Department of Electronics that Ministries/Departments have exercised options between outright purchase or hiring whilst acquiring Data Processing Equipment, on the basis of financial and other considerations at the time of purchase. Whilst the Railways appeared to have preferred the acquisition of such equipment on rental, other Ministries/Departments, such as the Department of Statistics, Planning Commission, IARS, Ministry of Defence (Army HQ/Naval HQ, DRDO) had met their requirements mostly through outright purchase.

3.31. The Department of Electronics has further stated:—

“The option between purchase or hiring will have to be based on particular requirements, planned period of usage for a particular system or sub-system, terms of payment offered and considerations of discounted cash flow etc. It is generally known that monthly rental charged by international companies for different sub-systems range from 1/30th to 1/60th of the purchase price and as such anticipated usage of such equipment for a period extending beyond about 6 years should warrant acquisition through outright purchase only. The Electronics Commission (which was set up in 1971) had taken note of this aspect on the basis of discussions through a negotiating team with IBM and ICL set up by the Commission. It was then decided that import of computers into the country in future will be permitted on the basis of outright purchase only. As regards computers and other machines available from within the country, the option on the mode of acquisition rests with the different Departments.”

3.32. From the information made available to the Committee it is seen that the following Ministries/Departments have made outright purchases of computer and data processing equipment:

1. Planning Commission
2. Indian Metereological Department
3. Department of Space
4. Computer Centre, Department of Statistics
5. P & T Board
6. Audience Research Unit of All India Radio
7. Central Sales Unit, Commercial Broadcasting Service, All India Radio.
8. Chief Controller of Imports and Exports.

The Ministries/Departments mentioned below have hired such equipment:

1. Registrar General of India
2. Central Bureau of Investigation
3. Department of Commercial Intelligence & Statistics
4. Department of Economics & Statistics
5. Union Public Service Commission
6. Institute of Secretariat Training & Management
7. Overseas Communications Service
8. Directorate General, Supplies & Disposals.

3.33. The Committee desired to know why some Ministries/Departments had preferred hiring of data processing equipment to outright purchase. Some of the replies furnished in this regard by the Ministries/Departments are reproduced below:

(i) *Registrar General of India*

"The Ministry of Finance had gone into this question and, after careful consideration, approved the proposal to hire the IBM computer. The reasons which weighed with the department in its decision to hire rather than purchase the computer are summarised below:—

- (i) Very fast technological development was taking place in the field of electronic data processing;
- (ii) In the case of outright purchase, the equipment would become a deadweight if and when a change over to a more sophisticated system were decided upon;
- (iii) Maintenance in the case of a hired system was more prompt and efficient. The Department did not have to worry about import of spare parts etc.

The other advantage was that this office started with a small capacity computer, familiarised itself with the techniques and then built up the requisite capacity at the appropriate time when optimum use could be ensured."

(ii) *Central Bureau of Investigation*

"5 machines (Punch, Verifier, Sorter, Interpreter, Accounting machine) were hired from IBM in 1968. The hiring of the machines in preference to the outright purchase was

carefully considered. The relevant para of the proposal sent by CBI is reproduced below:—

‘The purchase price for the above 5 machines is quoted by the firm at Rs. 1,57,776+Rs. 20,959.84 towards transit and installation charges. The above quotations are exclusive of ST and other incidental taxes, if any. If the machines are purchased, maintenance charges have also to be paid to the firm to look after the machines. The annual maintenance charges for the first 3 years is Rs. 6,350.40 p.a. and they increase progressively for every 3 years. The firm is, however, willing to rent out the machines in the event of which the maintenance charges need not be paid. An additional advantage in hiring the machines is that in case they are found to be unsuitable for any reasons, we would be in a position to return them after a minimum period of 2 years, on payment of proportionate transit charges according to the period for which the machine was used. The rentals quoted by the firm are Rs. 38,592/- per year (recurring) in addition to installation charges of Rs. 20,959.84 (non-recurring). On a full consideration of the various aspects of the deal, it is considered more advantageous to hire the machines. It is significant to mention here that although the manufacturing concern is American, no foreign exchange is involved in the transaction. When the CBI switched over to computerisation, 2 machines (Sorter and Accounting Machine) were surrendered. When the improved models of Punch/Verifier which included interpretation of the data punched thereon, were hired in replacement of the earlier model, the interpreter was returned. The surrender of the 3 machines would not have been possible had the machines been purchased outright. Moreover the hiring enabled the Department to go in for improved models of the machines at any date. This was not possible in the case of outright purchase and the machines even if out-dated would have become the property and liability of the Department. This was taken into account when hiring instead of purchasing the machines.’”

(iii) *Department of Commerical Intelligence & Statistics*

“As regards the economics of purchase vis-a-vis hiring this Department has all along been of the view that hiring

should be preferred for reasons stated below:

- (a) From the point of view of servicing and maintenance: our experience is that prompt and efficient attention is given by the firms in case of hired machines.
- (b) In case of outright purchase, we are to make heavy capital investment in a particular year which is not always available.
- (c) Speedier and advanced models are being produced now-a-days from year to year. In case of outright purchase of particular model, it will not be possible to utilise the services of an advanced model, unless the life of the purchased machine is exhausted on the other hand the hired machine can be returned to the firm by three months notice."

(iv) *Overseas Communications Service*

"It was more economical to hire the machines. Other advantages for hiring of the machines were:

- (a) Return of any machine(s) when not required;
- (b) Replacement of any machine(s) whenever improved versions were available; and
- (c) All the machines could be returned to suppliers if a change in system becomes necessary.

The hiring Scheme ensured continued supply of spare parts, whereas if the machines were purchased, the non-availability of spare parts would have presented a recurring problem.

Having regard to the economics of the scheme, hiring the machines on rental basis, was considered advantageous."

(v) *Directorate General, Supplies & Disposals*

"The table below will show the entire financial implications involved in the out-right purchase and in the rental basis of the IBM machines.

A. *Outright Purchases*

Machine	No.	Cost Machine Rs.	Maintenance Charges		
			Rate Month Rs.	Yearly maintenance charges Rs.	Total main- tenance char- ges for 8 Years Rs.
1. Sorter . . . .	1	20,114.00	223.10	2,677.20	21,417.60
2. Reproducer . . . .	1	42,935.00	290.60	3,487.20	27,897.60
3. Accounting machines	1	2,88,166	676.90	8,122.80	64,982.40
Total		3,51,215.00			1,14,297.60

Therefore the total cost for out-right purchase would be Rs. 4,65,512.60.

B. *Rental Basis*

Machine	No.	Monthly Rental Value Machine	Yearly Rental Value	Monthly maintenance charges	Total rental charges for 8 years
		Rs.	Rs.	Rs.	Rs.
1. Sorter . . . .	1	425.00	5,100.00	Free	40,800.00
2. Reproducer . . . .	1	851.00	10,212.00	Do.	81,696.00
3. Accounting machine	1	4255.00	51,060.00	Do.	4,08,480.00
				Total	5,30,976.00

The above table has been arrived at on the basis of the expected normal life of 8 years in running condition of the said machines.

Although there will be some financial saving to the tune of Rs. 65,463.40p. on out-right purchase as it is revealed from the above table, it will not be advantageous for us to purchase these machines on out-right basis for the following reasons:—

- (i) Under IBM Mechanical replacement policy, the performance of the machines installed on rental basis are continually under the review of IBM Engineers.
- (ii) The replacement of any equipment parts is made by IBM at no extra charges, while in the case of out-right

purchase the spares|parts etc. will have to be replaced at extra charges. In such a case there is a possibility that sometimes spares may not be in their stocks and they may have to be indented, which will be a time consuming process and during the intervening period the machines will be lying idle. But in the case of machine obtained on rental basis such an eventuality will not arrive because of the interest of firm involved in losing the rental charges.

- (iii) On expiry of normal life of the machines the same can be replaced by new ones.
- (iv) In the present days of fast changing technology in the field of data processing any model is likely to be outmoded within a very short span of time. In such a situation it is not advantageous to go in for out-right purchase of machines. Our experience in the past about the out-right purchase of Power SAMA MCs is that no substantial amount could be realised in their disposal when we shifted to 80 cols. Mcs. It was in view of this very fact that the then DDG(A) categorically expressed his opinion in favour of giving in machines on rental basis.
- (v) Moreover in the case of out-right purchase of machines the whole amount of Rs. 4.65.512.60 p. will have to be incurred in lump-sum at one time which means blocking of funds to start with and thereby deprives the public exchequer of the benefit of interest thereon. The whole savings of Rs. 65.463 in such a situation is likely to be neutralised.

In view of the above stated facts it seems advantageous to go in for machines on rental basis rather than in for out-right purchase."

(vi) *Indian Airlines*

"Indian Airlines decided to hire the first computer instead of purchasing as they were not sure of the turn the events would take consequent upon the anti-computer sentiments in the country. Moreover, in case of hired equipment the maintenance is guaranteed by the suppliers whereas, in case of purchased equipment, this was to be done through a separate contract on payment of separate charges. Since the Corporation did not have any

experience of handling and maintaining computers, it was considered advisable to make the suppliers responsible for the maintenance.

The second computer was installed in January, 1972 to augment the capacity, which was essential to cope up with the increasing load of Advance Reservations and other jobs that were already computerised. Around the same time it was expected that the installation of a Real Time Computer System, which was under consideration, would be possible by mid 1974. Indian Airlines, therefore, decided to hire the second computer instead of purchasing as a stop-gap arrangement for about 2½ years. It was planned at that stage that both the hired computers would be retired soon after the installation of Real Time Computer."

3.34. During evidence before the Committee, the Director, Central Bureau of Investigation gave the following justification for hiring of data processing equipment:

"At that time, we hired five machines. At that time, it could not be anticipated whether we would require all those five machines all the time. So, we thought that it would not be good to purchase them."

3.35. In regard to the hiring of data processing equipment by the Heavy Vehicle Factory, Avadi, the Secretary, Defence Production stated in evidence:

"I feel that in the case of data processing machines of the type which we are dealing, I did not think there are any security considerations. Our experience in the department is that a machine generally lasts for about 5—7 years and you will have paid almost an equal amount for total purchase also over that period. If we go in for hire, we can return the machine even earlier and can go in for a new unit."

He added:

"My experience so far as this machine is concerned shows that hiring is better. One important consideration is that the machines which are given to us usually reconditioned machines. If we go in for later models there is



less possibility of their being old machines. If we go in for a new model it is a better machine."

3.38. The Committee desired to know whether the option of replacing machines by better models had actually been exercised in any case. The representatives of the Ministry of Commerce replied:

"We entered into an agreement with the ICL in 1972 to replace two of their tabulators which were of 1952 model. The agreement was, they will replace it by another model which was brought in later round about 1960. In 1973 we discovered that the model which was given to us was not really a good one. We discussed it with ICL who said, there are over 222 machines of this model in the country, 2 of which were in the eastern region. So, we decided that we will not go in for this old model and we asked the ICL to supply us the later machines. The previous contract was changed and we got a new model machine in September, 1975."

3.39. In reply to a question as to what should be the criteria for deciding whether equipment should be hired or purchased, the witness stated:

"I am not making any dogmatic statement. I am only saying that the economics of the whole thing should be gone into. Our experience is that a machine works satisfactorily for five to seven years. So, the total cost of the machine and the hire charges spread over seven years is almost the same. Hiring gives the added advantage of changing the machine wherever we want."

3.40. Whereas the Department of Commercial Intelligence and Statistics had preferred hiring of equipment, the office of the Chief Controller of Imports and Exports which also comes under the administrative control of the same Ministry viz., Ministry of Commerce had purchased their requirements of IBM machines outright. In this connection, the Chief Controller of Imports and Exports stated in evidence:

"The question whether it should be outright purchase or hire was examined by the Chief Controller of Imports & Exports and his preference was to acquire the machines, because he felt that it would be economical to buy it outright."

3.41. Dealing with this question, the Secretary, Foreign Trade stated in evidence:

"In this case I find that the CCIE had gone into the comparative advantages of hiring and purchasing and come to the conclusion that purchase would be better, and the Ministry had agreed with it. Finance had also concurred with it. On the question whether there is a definite policy that machines of this type should be hired or purchased, I am afraid there is no such policy. Each case seems to have been decided on its merits."

3.42. The Secretary, Department of Personnel and Administrative Reforms, while referring to the hiring of equipment by the Institute of Secretariat Training and Management stated in evidence:

"Since the UPSC was also doing the job and they had hired some tabulators and sorters, on that analogy, the ISTM also decided to hire the tabulator and sorter. In any case in economic terms we have found that hiring was far more economical than purchasing those machines."

3.43. The Audience Research Unit of All India Radio had acquired data processing machines on outright purchase basis. During evidence the Committee enquired into the reasons that had weighed with the Unit in preferring outright purchase to hiring. A representative of the Ministry of Information and Broadcasting stated:

"About the life of electronic gadgets, one can never say. Even if there is a guarantee of 10 years, it may serve only for 5 years or it may serve for 15 years. We took the life as 10 years. We calculated what would be investment, service charge, etc., if we made an outright purchase and we found it would be economical for us to purchase it outright rather than hire it. Secondly, our thinking was very much influenced by the fact that both IBM and ICL were more interested in hiring out their machines rather than selling them. So, we thought there must be some reason for it."

3.44. Explaining the reasons for resorting to hiring of data processing equipment, the Secretary, Department of Space stated in evidence:

"Hiring is done only in those cases where the hardware is built in our country. The IBM has an operation range

of electronics which is undergoing a large-scale, transformation. We have a problem that when you have to get a card punched, the computer you have purchased and the card punches which are available in the country are manufactured by the IBM under authority of the Government and these punches if you want to purchase, contain some foreign exchange component. In a particular system which you require for use, hiring becomes a simpler process because they are maintained by Indian manufacturers. We have resorted to it in some cases."

3.45. In this context the Secretary, Ministry of Communications stated:

"The other aspect which I might mention in this connection, since this has come out while taking the earlier evidence also, is that in the matter of outright purchase, there is an important element and that is that you have to have a lot of expertise in your Department to be able to handle those machines when they go out of order and all that. If you have a 'hire' arrangement then the type of expertise required is very much less in handling these machines....In the case of sophisticated equipment, not every Department has got the capability unless they build it specially for their own purpose to be able to maintain it."

3.46. The Committee asked whether Government Departments would have to continue hiring data processing equipment because they neither had enough resources to purchase them nor did they have enough expertise to maintain such equipment. The Secretary, Ministry of Communications stated:

"...if it is required as a policy to purchase these machines outright, this can be done. The other point about the outright purchase is, as has been pointed out earlier, that these machines are of a very old vintage. The Electronics Department will bear me out. If you purchase them outright, you continue to live with them. Of course, the IBM as a company would like to keep machines on and on for a very long period of time, to take the maximum life out of it. But there is a possibility that if at any particular point of time better technology is available, if something better is produced in the country, these IBM machines could be given up."

3.47. In reply to a question whether any expertise was available in the user Ministries to assess the life of a hired machine with a view to fixing reasonable rentals, the Secretary, Ministry of Communications stated:

"In the case of electronics equipment and data processing machines, about the question of the condition of a particular equipment at a particular point of time, one has to see whether there are major outages. Suppose I use a machine and it does not go out of order for months. It means, it is giving a service, as good as a new machine. If it goes out of order for a few minutes every day, very often, then it is a bad machine. What the IBM do is, when they give us so-called hired machines or used machines, they replenish portions of it, sections of it, by new equipment. They make it function like a new machines. That is why they have been so successful in this business over such a long time."

3.48. One of the reasons given for hiring of data processing systems by the Ministries is that this enabled the Departments concerned to go in for new models by surrendering old models. Asked how far this was compatible with the principle of financial prudence, a representative of the Department of Electronics stated:

"There are, of course, certain problems with regard to the financial modelities of hiring and purchase. With regard to companies etc., hiring seems to be an expense which can be incurred, whereas investment on computers by outright purchase calls for certain additional levies etc. in terms of taxes. This has some bearing on this whole issue. We have to consider whether we can circumvent it."

3.49. The Committee desired to know whether the Department of Electronics had now evolved a system of checks and balances in so far as the hiring of data processing equipment by Government Department was concerned. The representative of the Department of Electronics stated:

"With regard to hiring and purchase, one of the first decisions by the Electronics Commission in 1972 was that in future, all imported electronic systems will be purchased by outright purchases. With regard to the machines available indigenously, both computers as well as unit

record machines, there is no very specific directive. It is essentially left to the respective departments and their Associated Finance to determine, based on the period for which they want to hire. There can be certain cases of software etc. which one may like to take for very short periods. In that case, there may be a justification for hiring. One has not laid down any rigid procedure. But hereafter it will be the responsibility of the Department of Electronics to clear the requirements of unit record machine and other machines to be procured. We will ensure that such a detailed exercise is made."

3.50. The Committee pointed out that for various reasons, different Government Departments/Ministries had adopted different practices in regard to hiring or purchasing of data processing equipment. Asked whether there should not be common policy in all Government Departments in this regard, a representative of the Ministry of Information and Broadcasting stated:

"I think it would depend upon the use to which it is put, as also the overall economics. The economics should be worked out at the time of placing of the order. Subject to the usage of the machine, its particular mode of purchase or hire could be decided."

3.51. The Committee enquired whether in each case of purchase/hire, the economics of outright purchase vis-a-vis hiring was worked out and if this was not done the reasons therefor. The replies furnished by Ministries/Departments on this point are indicated below:

#### 1. *India Meteorological Department*

"The economics of hiring vis-a-vis outright purchase were worked out by the Department. The details thereof are given below:—

The initial proposal was for hiring a computer but when the relative economics of hire versus purchase were worked out it was found that the outright purchase was beneficial. Considering the comparative figures of the estimated expenditure for 4 years on the rental

(Rs. 41,58,960 excluding importation charges payable in addition) and on the purchase (Rs. 36,72,100 excluding importation charges payable in addition) it was found that the estimated expenditure on rental for 4 years exceeded the estimated expenditures on outright purchase."

### 2. Air India

"The initial computer configuration was obtained on outright purchase basis. Analysis carried out prior to the purchase of the computer indicated that the rental charges over a period much longer than 5½ years on a regular basis for a growing number of areas, outright purchase was regarded as definitely more economical."

### 3. Indian Airlines

"The comparative expenditure of hire vs. purchase of computer as on 31st March, 1975 is given below:—

	(Rs. in Lakhs)	
	Cost of purchase	Hire Charges
First system installed in January 1967 . . . . .	82.45	80.33
Second system installed in January 1972 . . . . .	60.64	35.91"

### 4. Registrar General of India

"With outright purchase, the price and maintenance charges would have been as under:—

- (i) Purchase price US \$ 464,300 (ex-factory).
- (ii) Maintenance charge US \$ 861.75 per shift per month.
- (iii) Other charges for replacement of parts, etc. from time to time.

The total cost would have come to about Rs. 46 lakhs excluding installation charges and cost of spare parts over the years, the quantum of which cannot be estimated as the work was handled by company. Upto September 1975, the department has paid a sum of about Rs. 59 lakhs by way of hire which is inclusive of all charges."

### 5. Central Bureau of Investigation

"Statement showing the expenditure that would have been incurred had these machines been purchased outright and

the rental so far paid since installation is reproduced below:—

*Cost involved in the case of outright purchase of*

	5 machines	Rental	Rs.
Alpha Punch . . . . .	17,057	Total Rental paid from June, 68 to Nov., 1975	2,29,163
Verifier . . . . .	18,668		
Interpreter . . . . .	40,174		
Sorter . . . . .	20,755		
Accounting Machine . . . . .	1,50,738		
Importation charges of Interpreter	12,350		
ST . . . . .	[17,149		
Minimum maintenance charges from June, 1968 to Nov. 1975 . . . . .	1,21,432		
	<u>3,98,323</u>		

A critical perusal of the statement would indicate that the Department would have, upto November, 1975, paid Rs. 3,98,323.00 as the cost of 5 machines and incidental expenses against the total charges so far paid amounting to Rs. 2,29,163."

#### 6. Planning Commission

"Since continued use for in-house work was anticipated and the equipment was available through a Ford Foundation grant, hiring was not considered as an alternative. The subsequent outright purchases were also made on the expectation of continued use of the same."

#### 7. Department of Statistics—Computer Centre, New Delhi

"Before placing the indent on D.G.S.&D., the economics of outright purchase *vis-a-vis* hiring was examined for punch-

ing/verifying machines. The relative cost of outright purchase/hiring on one shift basis are shown below:

Items	Monthly rentals \$	Purchase Price \$
Alphanumeric Card Punch	42.00	2100.00
Numeric Card Punch	37.00	1900.00
Alphanumerical Printing Card Punch	72.00	3750.00
Alphanumeric Verifiers	52.00	2275.00
Numeric Verifiers	47.00	2000.00

The rentals quoted for running these machines on a two shift basis were  $1\frac{1}{2}$  times the amounts quoted in case of one-shift use. Outright purchase was considered more economical in view of the long term use envisaged at the Centre and using machines in two shifts."

### 8. Department of Space

"In the case of dedicated computers like MINSK, TDC-12 and PDP-11, the question of working out the economics of hiring or outright purchase did not arise as these had to be obtained for specific purposes for which it was not considered proper to hire or use outside computers. In the case of general purposes computers procured for the Vikram Sarabhai Space Centre and the Physical Research Laboratory, the idea of hiring was not at all considered as the computers were purchased only when they were required full time for dealing with the problems arising in the research and development work at the Unit concerned. As these computers were required for full-time work, and have been expanded to meet the computational requirements, the question of working out economics of hire did not arise."

### 9. Directorate of Economics and Statistics

"Purchase/hire of mechanical tabulation equipment was done on five different occasions. On the first occasion when two Automatic Punches, two Verifiers and a Programme Punch were purchased no assessment was done of the relative merits of hire versus purchase. On all subsequent



occasions except the one relating to the purchase of Hand Punches, the machines were hired. For this purpose a study was made of the relative economics of purchase versus hire."

#### 10. Department of Commercial Intelligence and Statistics

"The economics of outright purchase *vis-a-vis* hiring was worked out only at the time of purchasing IBM 421 tabulator in 1961. The two ICL Reproducer Gang Punches were also purchased in 1966 in replacement of the two machines purchased earlier without any such study since the Ministry of Finance were not agreeable to the proposal of this Department for hiring them. In regard to the hiring of the remaining machines installed in this Department the economics of outright purchase was hiring was also not studied.

The relevant details of the study made in December, 1959 in regard to the purchase of the IBM 421 tabulator mentioned above are shown in the statement below:

Rental Value	Purchase Value
1. Rental Charges for 8 years @ Rs.2873.75 per month .....	1. Cost of Machine Rs. 45,587
Rs. 2,75,880	
2. Purchase price of control panels .....	2. Maintenance charges
Rs. 2,953	(a) \$ 93 for Rs.15,903 first 3 years
Total: Rs. 2,78,833	(b) \$ 111 for Rs. 18,981 next 3 years
	(c) \$ 129 for Rs. 14,706 next 2 years
	3. Purchase of control Panels Rs. 2,953
	<u>Rs. 1,98,130</u>

Purchase value was less than the rental value for 8 years which is the normal life of a machine, and was therefore considered more economical and accordingly the machine was purchased."

#### 11. Audience Research Unit, A.I.R.

"Comparative charges for hire and out-right purchase of these machines were worked out. The monthly charges for hire of these machines at that time were Rs. 3,830 or

about Rs. 46,000 per annum. Thus, for a normal life of 10 years of the machines, the hire charges would have been about Rs. 4,60,000. The price of these machines paid by the Government was Rs. 2,62,633.52p. (including 3 per cent Central Tax) to which may be added the maintenance charges for 10 years @Rs. 1575 p.m. i.e. Rs. 1,89,000: The total would work out to Rs. 4,52,000 approximately."

#### 12. *Central Sales Unit, Commercial Broadcasting Service*

"Comparative charges for hire and outright purchase of the machines were worked out. The monthly charges for hire of these machines at that time were Rs. 5760. Thus, for a normal life of 10 years of the machines, the hire charges would have been Rs. 6,91,200. The price of these machines paid by the Government was Rs. 4,14,851.85p. to which may be added the maintenance charges for 10 years @Rs. 16,800 per annum, i.e. Rs. 5,82,900 approximately."

#### 13. *P. & T. Board*

"Relative economics of purchase/hire were not considered since to the best of our knowledge no scientific computer was available for hire in India at the time the purchase of a computer for TRC was decided (1962-63 or 1963-64). The only scientific computers known to us as existing in India at that time were IBM-1620 (at IIT Kharagpur) and Elliot-803 (at HAL Bangalore) and both these were outright purchases."

#### 14. *Overseases Communications Service*

"Relative economics of outright purchase as against hire were studied in depth before deciding to hire the machines. The total cost of outright purchase of all the machines to be used would have called for an investment of 12.21 lakhs. The annual cost comprising of depreciation, interest on capital, service/maintenance, worked out to Rs. 3.1 lakhs for capital investment of Rs. 12.21 lakhs. As a comparative figure, the cost of the same system on a rental basis work-

ed out to Rs. 2.7 lakhs per annum. Apart from this recurring annual rental, OCS had to pay initial installation charges amounting to Rs. 91081.34 for all the 34 machines installed at various Branches."

#### 15. Union Public Service Commission

"The Commission's office has taken only Tabulators and Sorters on hire and maintenance basis. In 1971 one Reproducer was also obtained on hire and maintenance basis. The economics of outright purchase *vis-a-vis* hiring of these machines were worked out in 1970 and a comparative statement, indicating the expenditure on outright purchase basis and also expenditure on rental basis to be paid for one Tabulator, one Sorter and one Reproducer for a period of 7 years, (according to Company supplying these machines the normal life of these machines is 7 years), is given below:

##### (A) Expenditure on outright purchase

	Rs.	Rs.
(i) Sale price of Type 904 Tabulator . . . . .	1,90,400	
(ii) Sale price of Type 302/0 Sorter . . . . .	18,020	
(iii) Sale price of Reproducer with Emitter . . . . .	39,990	
	<hr/>	
	2,48,410	
(iv) Central Sales Tax on Rs. 2,48,410 @ 5% . . . . .	7,452	
	<hr/>	
	5,862	2,55,862
(v) Loss of interest for 7 years @ 5% per annum on above amount . . . . .		89,552
(vi) Maintenance charges of the three machines for 7 years at the following quarterly rates:		
TABULATOR . . . . .	Rs. 2,670	
SORTER . . . . .	Rs. 175	
REPRODUCER . . . . .	Rs. 401	
	<hr/>	
	Rs. 3,255 Per Quarter	
(i.e. Rs. 3,255 x 4 x 7)-		91,140
	<hr/>	
Total :		<hr/> <u>4,36,554</u>

**(B) Expenditure on rental basis**

(i) Rental for Tabulator for 7 years @Rs. 3,165 per month	2,65,860
(ii) Rental for Sorter for 7 years @Rs. 354 per month	29,736
(iii) Rental for Reproducer for 7 years @Rs. 750 per month	62,000
Total :	3,58,596

Excess expenditure on out-right purchase (A—B) Rs. 77,958

It would be seen from the above that it was economical to hire these machines on rental basis rather than on out-right purchase basis. In the comparative statement the loss of interest on capital investment has been worked out at the rate of 5 per cent per annum, which is much lower than the present prevailing rate."

**16. Institute of Secretariat Training and Management**

"This organisation hired only one sorter and one tabulator. The estimated life of this equipment was stated to be 7 years. Mechanical punches and Electrical Verifiers were available only on out-right purchase basis. There was, therefore, no question of hiring them. In so far as the sorter and the Tabulator are concerned, it would not have been economical to make an out-right purchase for the reason that the life of the equipment was stated to be 7 years and the expenditure on capital investment spread over this period and on maintenance charges and on replacement of parts would not have been much lower than the hire charges. However, the actual economics of out-right purchase *vis-a-vis* hiring were not worked out. Further an out-right purchase would preclude the replacement of the machines by more advanced versions until the machine had outlived the normal life."

**17. Director-General of Supplies and Disposals**

"With regard to the IBM punches and verifiers installed in the DGS&D in August, 1968, the question of hiring vs. purchase was considered.

As regards the unit record machines installed in 1972 also, initially the relative economics of hire vs. purchase were not considered but subsequently in November, 1974, at

the instance of Internal Finance this question was examined when the issue of payment of continued hire charges came up for sanction.

With regard to the 5 sets of ICL punching and verifying machines installed in the regional nucleus cells, the question of out-right purchase *vs.* hiring was considered at the time of installation. Mainly because of the budgetary restrictions, it was decided to hire the machines."

3.52. An analysis of the replies furnished by various Ministries/Departments in regard to the relative economics of hiring *vis-a-vis* outright purchase of data processing equipment reveals that the Ministries/Departments had no real idea of the life of these machines. Each Ministry/Department had worked out the cost of hire/purchase by adopting a different period as the probable life of each machine and have come to different conclusions.

3.53. The Directorate of Economics and Statistics in the Department of Agriculture by assuming the life of these machines as 8-9 years has worked out the relative expenditure to be incurred in case of out-right purchase and hiring of machines as per statement at Appendix V. It is seen therefrom that over a period of nine years, the charges for hiring and outright purchase are almost equal.

During evidence the Committee pointed out that if the lifetime of these machines was assumed to be more than 9 years, the hiring of such equipment would not be economical so far as the relative cost of shiring *vs.* purchase is concerned. A representative of the Ministry of Agriculture stated:

"We have assumed, based on the past experience, that the life of a machine is around nine years. One can never be certain about that—sometimes its life may be around seven years and sometimes it may be ten years. We assumed its life at nine. We worked out the relative economics of it as you will see from Annexure V. Apart from that there was some other advantage of having the machines on hire basis which my colleagues from other Ministries have also tried to explain. If the new model comes, we can changeover from one machine to another. If there is a new installation, there we have not to spend anything on installation or on transportation. There are certain additional advantages also. Therefore in any case at least our study on relative economics indicated that there was

no disadvantage in having it on hire basis. In one or two cases they are more or less equal but there was no disadvantage in having the machines on hire basis."

3.54. On being pointed out that the calculation of the life of the machines at nine years may be only notional and its actual life may be much more, the witness stated:

"Maybe in some cases the lifetime may be more. Our experience, I do not think, has indicated the same thing. In some cases it may be more. Perhaps the maintenance cost will also go up in such a case and if you want to keep it longer than seven or eight years, I have a feeling that the cost of maintenance of the machine will be much more."

3.55. In justification of their decision to hire rather than purchase data processing equipment, the Overseas Communications Service stated: "There is absolutely no comparison between the hiring charges being paid and the cost of acquisition, the capital investment on outright purchase being too high". Referring to this statement, the Committee enquired during evidence whether the economics of hiring and outright purchase had been considered in detail. A representative of the Ministry of Communications stated:

"We did make an exercise on the alternatives of outright purchase and hiring; our study showed that hiring would be more economical for us both financially and from the practical point of view of handling the machine and developing the expertise, in course of time within the department. We computed the annual recurring charge based on the capital price, taking into account depreciation, interest on capital and annual servicing charges and the cost of spares, because if we purchased them outright, only personnel service for repairs will be given by suppliers and we have to pay for the spare parts. Our experience has shown that when there is a servicing contract limited to availability of servicing personnel for attention to repairs you are more or less driven to a helpless position when the supplier says "These are the parts required for replacement and this is their price." However the "all in service" contract that goes with hiring is more beneficial as, the rental terms include supply of spares free of charge. We found that the annual recurring charge for hiring would be Rs. 2.7 lakhs. compared to the recurring charge

of Rs. 3.15 lakhs, had we gone in for outright purchase, taking the life of machine as 10 years.”

3.56. In regard to the life of the equipment the Committee pointed out that there appeared to be a wide variation between the conceptual life and actual life as was apparent from the fact that against the assumed life of 5 or 6 years the machines had been used for 10 years.

In this connection the Secretary, Ministry of Communications stated:

“This is a unit record machine and taking the life as 10 years would be very realistic.”

3.57. The Committee were informed that scores of IBM machines having no book values were in circulation, earning machines rentals at fixed rates. It was further revealed that while IBM recovered, for most of the machines, depreciation based on 4-year life, such machines lasted for many more years. Another interesting feature of these rental machines was that most of them had already served elsewhere, in other developed countries, the best part of their useful lives. When they became obsolete in those countries and therefore scrapped, such machines were being imported into India on an ‘As Is’ basis, refurbished and circulated as rental machines earning revenues at fantastic rates.

3.58. During evidence the Committee enquired whether at the time of hiring IBM machines, the user Departments were aware that they were getting only reconditioned machines and whether any stipulation was made to the effect that only brand new machines would be supplied by IBM. A representative of the Department of Electronics stated in this connection:

“When it is a question of hiring, normally, the manufacturers should see that this system fulfils a particular performance. They do not firstly normally stipulate that this is a brand new or a used system because a particular system must perform to certain stipulated performance levels. And that is what they ensure. I can assure you that currently, with regard to all negotiations for purchase of computers, we invariably ask each of the manufacturers to confirm that the equipment that will be given to us is a brand new or if the accessory elements of the system are

**reconditioned.** Some manufacturers find it convenient if some of the old peripherals which are essentially mechanical in character are re-conditioned by them and sold by them. Within the total system some of the peripherals are reconditioned and this is what they tell us. Sometimes we can also negotiate with them that if they are reconditioned then there should be reduction in prices. We shall ask for the reduction if the systems are obtained through outright purchases."

He added:

"Normally we do not have that advantage when we hire them because there is no difference between the charges for hiring an old machine or a brand new machine. They charge the same rate for the old machines invariably. The machines supplied by them have to perform at a particular level."

### **C. Reasonableness of Terms and Conditions of Agreements with IBM|ICL**

3.59. The Committee's examination of the purchase/hire by Railways of data processing equipment from IBM and revealed that the firm had been imposing its own terms and conditions on the Government. The Railway Board had informed the Committee that "The form of agreement entered into with the IBM is the one prescribed by them universally. A comparison of the clauses in the I.B.M. format with the standard conditions of contract prescribed in the Indian Railway Stores Code reveals that generally there are no conditions in the former which are fundamentally divergent from, or in conflict with the standard conditions of contract. In regard to the special provisions in the I.B.M. agreement such as for prices payable, delivery schedule etc., it may be clarified that even if the standard conditions of contract would have been adopted, the conditions prescribed by the IBM would have been incorporated as special conditions."

3.60. The Committee enquired whether the terms and conditions of the agreements entered into by the various Ministries/Departments conformed to the standard terms and conditions. The replies furnished by the Ministries/Departments on this point indicated that in cases where the acquisition of equipment had been routed through the DGS&D, the indenting Ministries/Departments completely



relied on the DGS&D in so far as the terms and conditions of agreements were concerned. In cases where the Ministries/Departments had entered into agreements directly with the supplier firms, it has been stated that IBM/ICL have their own standard terms and conditions and on entering into any contract with them one had to execute the agreement on their standard form only.

3.61. The Committee desired to know whether before accepting the terms and conditions imposed by the supplier, any attempt had been made by the user Departments to examine in detail the reasonableness of these terms and conditions or whether they were merely taken for granted. The Committee also wanted to know whether any legal opinion had been obtained by the user Departments about the reasonableness of these agreements. Some of the replies received on this subject are indicated below:—

(i) *Air India*

“The standard terms and conditions of purchase/hire of equipment from IBM were found acceptable and hence were agreed to by Air-India. No special attempt was made to examine the reasonableness of the terms and conditions of IBM by referring them to legal experts within or outside the Corporation. The arrangements with IBM have been found to be working satisfactorily.”

(ii) *Indian Airlines*

“The terms and conditions laid down by the suppliers were standard ones. However, they were considered to be reasonable.”

(iii) *Registrar-General of India*

“The terms and conditions offered by the firm were the standard terms offered by them to other organisations. The reasonableness of the terms and conditions were not specifically considered in detail.”

(iv) *Central Bureau of Investigation*

“The agreement entered into with the IBM for the hiring of the data machines was not accepted in toto but was duly examined in detail by our Legal Adviser who had

suggested the insertion of the following clauses in the Agreement:—

- (i) No travelling expenses were to be paid to the IBM representatives in respect of machines located at New Delhi;
- (ii) The IBM shall bear all expenses concerning return of equipment provided equipment was being returned on account of mechanical replacement;
- (iii) There should be clause to provide for adjustment/repairs/replacement at the risk of the IBM;
- (iv) The arbitration clause suggested by the IBM, namely that the arbitration should be by an Indian Council of Arbitration should not be accepted but arbitration should be by an officer of the Ministry of Law;
- (v) It should be specified in the agreements that the notice concerning termination of the contract could be given by the signatories on both the sides.

The suggestions at (i), (ii) and (v) were accepted by the firm and were incorporated in the agreement executed with the firm. They did not agree to (iii) i.e. repairs at their risk. As it was thought that repairs may not be necessary, incorporation of the condition was not insisted upon. About (iv) arbitration, the IBM did not agree to the condition suggested by the Legal Adviser/CBI as no such arbitration clause had been insisted upon by other users e.g. Registrar General. It was, therefore, decided not to have the arbitration clause."

(v) *Planning Commission*

"After the grant from the Ford Foundation had been accepted in consultation with the Ministry of Finance, the IBM had sent a standard agreement for sale execution in the Planning Commission as purchaser. Advice of the Ministry of Law was obtained on this whether there was any objection to the execution of the sale agreement. The Ministry of Law, while mentioning that in some other contracts some changes were asked for but the IBM did not depart from their printed terms, cleared the 'sale agreement'."

(vi) *Directorate of Economics and Statistics*

"The agreements signed by this Directorate in respect of data processing machines were as per standard forms forwarded by the IBM/ICL (who are the sole suppliers of such machines in India) without the addition of any special clauses.

As the same forms for agreements entered into with these firms have been used by other Government Departments, it was not considered necessary to obtain a legal opinion before finalising the agreements."

(vii) *Department of Commercial Intelligence and Statistics*

"No attempt has been made in the past to examine in detail the reasonableness of the terms and conditions of the contract before the agreements were concluded. The terms and conditions of the supplying firms have been accepted since it was said that they are the same to the customers throughout India."

(viii) *Overseas Communications Service*

"The terms and conditions for hiring of the IBM Data Processing machines were examined for their reasonableness. It was also ascertained from other user Government Departments and Public Sector Undertakings that they had accepted the IBM terms and conditions without alterations. Thereafter, the agreements with IBM were concluded by OCS accepting the terms and conditions in toto.

No legal opinion was sought for before entering into the agreements with IBM. At that time it was not considered necessary to do so on the basis that other users Government Departments and Public Sector Undertakings had accepted similar standard terms and conditions offered by IBM."

(ix) *Institute of Secretariat Training and Management*

"The machines like tabulators, sorters were considered indispensable. The ICL had their own standard printed terms and conditions of sale and hire, and they were agreeable to supply the equipment only on sending to them the order form which contained a provision that the purchaser/ hirer was agreeable to the supply of the equipment upon the conditions printed on the reverse of the order form.

The Ministry of Law was not consulted before accepting the terms and conditions of sale and hire."

(x) *Union Public Service Commission*

"M/s. ICL have their own standard printed terms and conditions and the user Departments have no option but to accept them if the machines offered by them were required. In other words the option was to accept the terms and conditions and the rate quoted by them and acquire the machines or to reject the terms and conditions and to do without the machines. Except IBM/ICL there was no other firm who could offer these machines. The Ministry of Law was consulted in 1948 about a specific condition appearing in the terms and conditions at that time, a copy of which was sent to them and their advice was obtained and utilised. After that there has been no occasion to refer the terms and conditions to the Ministry of Law because there was no ambiguity in the terms and conditions offered and as stated above there was no option but to accept the terms and conditions, if the machines were to be obtained from the said Company."

(xi) *DGS&D*

"It is true that the agreements for the hire of Computers had been entered into with the firms concerned on the terms and conditions offered by them. Since these terms were found to be the standard rental terms offered by the respective firms to all users, including the Government, they were accepted. The acceptance of the terms was in fact done after the Ministry of Law had been consulted. There was no attempt made to examine in detail the reasonableness of the terms and conditions."

"At the time of installation of the 5 IBM punches and verifiers on hire in 1968, the standard rental terms offered by IBM were referred to Ministry of Law. The Ministry of Law (Department of Legal Affairs, Advice A. Section) vide their U.O. No. 1152/68-ADV(A) dated 20-2-1968 stated "the agreement form is in the printed form of the company and appears formally in order from legal standpoint." After the clarification, when hiring of similar units from IBM/ICL was under consideration, on subsequent occasions, no such reference was made to Law Ministry."

3.62. From the above it is clear that no real attempt had been made in the past to examine carefully the reasonableness of the terms and conditions offered by IBM/ICL. Even the DGS&D, which is the Central Purchase Organisation, have accepted the terms offered by the respective firms as "standard rental terms". The Ministry of Law was also consulted in some cases for advice on specific points but as pointed out by the Planning Commission, "The Ministry of Law, while mentioning that in some other contracts some changes were asked for but the IBM did not depart from their printed terms, cleared the 'sale agreement'."

3.63. The following extracts from a letter written on 8 July 1974 by IBM to the Director General of Supplies and Disposals in connection with the supply of IBM Machines against DGS&D Tender Enquiry No. 220/05/101/7-6-74/CELL dated 1st July 1974 are relevant in this context:

"We would like to bring to your kind attention that it is IBM's standard policy to enter into agreement for purchase of IBM machines as per the form (3 copies) attached herewith. We would, therefore, request you to kindly sign and return these for placing the machines on order. On receipt of the agreement the machines will be scheduled for production and delivery as per the terms of our quotation. In case it is not possible for you to sign our agreement, all the conditions of our agreement should be recited in full in the Acceptance of Tender."

3.64. Since the IBM/ICL had been imposing their own standard terms and conditions, which the user Departments had to accept, the Committee desired to know whether there were any differential formulations in these contracts and whether these had been critically examined by the DGS&D, as a Central Purchase Organisation. In a note, the Department of Supply have stated:

"As far as purchase is concerned, the DGS&D has had occasions to scrutinise the terms and conditions quoted by ICL and IBM for the purchase of their machines in connection with the indents placed by some indenting departments. Since the standard terms of these firms were not in conformity with the general terms and conditions of the Central Purchase Organisation, negotiations were carried out with the concerned firms. As a result of these negotiations, the final sets of mutually agreed terms and conditions are more or less in conformity with the standard terms and conditions of the DGS&D."

As far as hiring of computers and allied equipment is concerned, the DGS&D has no standard terms and conditions as hiring of any equipment is not part of the scope and functions of the DGS&D. The DGS&D has for its own use however, hired certain peripheral equipment, punches, verifiers, tabulators, etc. from IBM and ICL on the firms' standard terms."

3.65. In another note, the Department of Supply have stated:

"As far as the reasonableness of the terms and conditions of any contract is concerned, it would appear to be wholly an administrative matter on which a decision can rightly be taken by the administrative Ministry, in this case the Supply Department. The Law Ministry has of course to be consulted wherever a question arises about the legality of any proposed provision in a contract. The legal experts are also invariably consulted in order to make sure that every contract fully and correctly expresses the intentions of the parties. In this background, the Supply Department and the DGS&D did not find any occasion to seek the advice of the Law Ministry on the reasonableness of the terms and conditions offered by the suppliers of computer and data processing equipment."

3.66. During evidence, the Committee asked why terms and conditions which were in full conformity with DGS&D requirements could not be arranged. The Secretary, Department of Supply explained that after negotiating with IBM, the DGS&D were able to narrow down the variations between the terms offered by IBM and ICL and those acceptable to the DGS&D.

3.67. In reply to question as to why Government should be bound by the terms and conditions offered by these firms and why the user Departments should not buy/hire on their own terms, the Secretary, Department of Supply stated:

"I would like to answer this question this way. Actually, in the case of IBM, when I submit the statement to the Committee, it would be seen that they have surrendered on more terms of theirs than we have surrendered on our terms. The point is that there are two different sets of terms. There must be a meeting point. After all what is meant by negotiations? You cannot think of negotiations where one party goes away with all their victory. Ac-

tually, the point is: IBM is a firm doing business the world over and they have a standard set of terms which they apply to all countries which purchase."

He further explained:

"Wherever a proprietary article certificate is given by the indenter, we have to naturally try and purchase the article from the single supplier to whom the tender enquiry has been released. When the single tenderer comes with his standard terms which are divergent from the terms we want naturally we have got to get to a negotiating table and at the negotiating table it depends upon how much negotiating capability there is in respect of each term. I would like to present before the Committee one term where we scored a win. They wanted delivery period based on receiving contract and import licence by 5-11-1971. We were able to negotiate guaranteed delivery period from the date of issue of acceptance of tender. Irrespective of when we gave import licence we insisted on guaranteed delivery period from the date of issue of acceptance of tender. We made them agree to this term. Secondly, they wanted the price currently prevailing in their country and changes, if any, to be notified by them. We said nothing doing."

3.68. The Committee pointed out that apart from the DGS&D who might have, as a Central Purchase Organisation, carried out some negotiations with IBM/ICL to arrive at mutually acceptable terms, all other user Ministries/Departments appeared to have reconciled themselves to the fact that there was no alternative but to accept the standard terms and conditions offered by these firms. In this connection, the Secretary, Department of Expenditure stated:

"The purchase contracts are very common and are not restricted to a few contracts with multinational companies. We try to enforce our standard contract forms within the country and even outside the country with relatively small suppliers where our bargaining position is very strong but in the case of an international monopoly firm we have to get down to negotiating table. This was not peculiar to IBM contracts."

3.69. The Committee enquired whether it would not be desirable that in the matter of hiring of equipment by Government Departments, DGS&D should be involved for laying down a policy as to

whether outright purchase or hire should be taken recourse to and what should be the terms and conditions thereof. The Secretary, Department of Supply stated:

"We could look into this. But, as far as the hiring is concerned, as I said, since we are not at all being associated or involved in the hiring of equipments by other Departments, it would perhaps be a little out of our jurisdiction to try to force the other departments to follow the same terms that we may like to lay down."

He added:

"In the long run, it would appear that it is a desirable thing to do because, since these are activities of hiring which involve lot of Government funds, we feel that some standard terms could be followed by the Government."

3.70. Referring to the hiring of equipment the Committee pointed out that after negotiating with the supplier firms, DGS&D could perhaps lay down some standard forms which may be followed by all other Ministries/Departments. The Secretary, Department of Supply stated:

"A very important suggestion has been made here and I would agree that it is a desirable thing to do. I would certainly request the DGS&D to go into this now and evolve certain standard terms and conditions which we should try and persuade the suppliers to conform to."

3.71. The Committee asked whether in order to judge the reasonableness of the prices charged by IBM/ICL, any market intelligence was obtained by the DGS&D. The Secretary, Department of Supply stated:

"May I say this? First of all the computer or a sophisticated equipment like the computer has got many facets and many applications. It is so even in the small calculators. Some people want memory and some people want recall. Therefore, what happens is: we get very specific specifications. If we get broad based specifications, it is possible for us to try and see whether we can get it at a reduced price. Secondly, unless an indent is floated or an order is placed the sellers do not give you a price quotation in definite terms. That is one of the problems we have.



Suppose we want to buy a ship, unless we specify the kind of ship and we place an indent or give clear specifications of what we want, no supplier the world over will quote a price and this is particularly so in regard to sophisticated equipment. We may make a hunch or guess that this must be roughly the price; in clear terms you cannot get the price. The moment a tender enquiry is floated on a single tender basis, there is no chance for us to get the price, especially when the item is so tailor-made; the specifications and parameters are very specific; they are not broad specifications."

3.72. In reply to a question whether at least as a guide to a future policy, market intelligence was felt to be essential in order to check the prices paid, the witness stated:

"I should like to take the cue from you and we should get in touch with the electronics departments. They are the specialists on this and they would probably be in a position to give us in small tables which particular types of computers are comparable so that we shall try and get the prices."

3.73. The Committee's examination of paragraphs 42 and 43 of the Report of the Comptroller and Auditor General of India for the year 1971-72—Union Government (Railways) relating to installation of computers on Railways had revealed that in the contracts entered into with IBM, the purchase price or the rental was expressed in terms of foreign currency. In para 1.40 of their 127th Report (Fifth Lok Sabha) the Committee had *inter alia* observed:

"Surprisingly, the hire charges were expressed in terms of dollars although the firm was operating in India and the payment in terms of rupees went up after devaluation in June, 1966 to the great advantage of the company and to the serious disadvantage of the Exchequer."

3.74. The Committee desired to know in how many cases the purchase price or the rental value had been quoted in foreign currency for payment in Indian Rupees. The Ministry of Finance have furnished the following statement in this connection:

1. Planning Commission (Computer Centre) The price of equipment purchased initially in 1964-65 was quoted in U.S. dollars but paid for by Ford Foundation in USA. All other equipment was quoted in rupees.

2. CW & P.C. (Research Station) Initially the rental was expressed from 28-12-66 to 30-9-67 in foreign currency. In December, 1966 the rental was US \$ 69 per month. From 1-1-67 to 30-9-67 \$ 72 per month. From 1-10-67 onwards the rental charged was expressed in Rupees.
3. Ministry of Railways To end of 1967 the purchase price/rental charges were expressed in terms of US dollars. From January 1968 the same have been expressed in terms of rupees and all the previous agreements have been modified accordingly.
4. C.B.I. Although the rates were initially quoted by the firm in US dollars, the payments were made in Indian rupees in terms of agreement.
5. Department of Space Purchase prices/rentals were not expressed in terms of foreign currency except in cases of PDP II Computer purchased by Indian Scientific Satellite Project from Digital Equipment Corporation.
6. Department of Defence Production Hire charges in original contract were expressed in terms of US dollars but payment was to be made in rupees only, but this was subsequently changed to rupees.
7. Ministry of Commerce (Deptt. of Commercial Intelligence & Statistics) Originally, the price of Machines was billed in US dollars, but paid in Indian Rupees. The Company has however been billing in Indian rupees since January, 1968.
8. Chief Controller of Imports and Exports The Agreement for purchasing such machines from IBM was entered into US dollars convertible in Indian rupees.
9. Department of Statistics (Computer Centre) Purchase price of Computer and accessories was expressed in terms of foreign currency.

3.75. In reply to another question as to what was the up to date extra payment on account of devaluation of the rupee in 1966, the Ministry of Finance have stated:

"In most cases, no extra payment was involved as the purchase/hiring was done after the devaluation. Only the following extra payments on account of devaluation were made.

- (1) Ministry of Railways Rs. 18.97 lakhs as additional rent on account of purchase and verifiers in use at the time of devaluation.
- (2) Ministry of Commerce (Deptt. of CI&S) Payment was made at the official rate of exchange upto December, 1967. Thus the amount at higher rate was paid for some months.
- (3) C.C.I. & E. A marginal extra payment of Rs. 93,733.22 was made."

3.76. During evidence the Committee asked why the Chief Controller of Imports and Exports had accepted the IBM terms of contract which *inter alia* stipulated the prices in a foreign currency for payment in Indian Rupees. The Secretary, Foreign Trade stated:

"The purchases of the machines which had been made by the Chief Controller of Imports and Exports were based on the assumption that these were the standard clauses in the matter of sales of all machines by the IBM to all end-users. The Chief Controller had made his own consultations and he was assured that these provisions in the contract were sort of standard provisions and I find from the file that he had raised the question about the price being quoted in dollars as against rupees and he had taken up this matter specifically with the IBM people. But, after a series of discussions with the IBM, he was persuaded to accept the standard form offered by the IBM, and that is why, there has been this particular clause."

3.77. When asked why the Law Ministry was not consulted before accepting the terms, the Secretary, Foreign Trade stated:

"I can only state the facts as on the file. Your statement that the Ministry did not consult the Law Ministry on the provisions of the contract is correct. As to why Law was not consulted, I can only offer an explanation on the lines of the earlier one I gave. The CCIE after discussions and consultations with others concerned came to the conclusion that these were the standard prevailing provisions in the contract of IBM and since the equipment concerned was what we had described as a proprietary one, he naturally felt he had to accept the provisions provided in the draft contract offered by them."

He added:

"The Chief Controller of Imports and Exports after consulting various departments which had purchased such machines from IBM and after failing in his attempts to persuade IBM to change that particular clause regarding the rupee-dollar parity mentioned there, persuaded himself that there was no other alternative but to accept the clause."

3.78. On being pointed out that even though the purchase of equipment was inescapable, the imposition of a particular form of contract should have been avoided, the witness stated:

"I fully agree that any purchase to be made in our country should not have had the dollar-rupee parity clause. But going through the files, I find the CCIE had himself raised this question and had a discussion with IBM protesting about this type of provision. But finally he himself agreed."

He further added:

"All I can submit is that the CCIE in that case followed the general practice that had been followed. Of course it is no excuse or defence for him. He should have proceeded about his own business on its own merits. I am only saying that he had made enquiries, according to the files before me, and found that in all the cases of supply of machinery by IBM, this particular provision was insisted upon and he accepted it."

3.79. In regard to the reasonableness of the terms and conditions quoted by IBM, the Secretary, Foreign Trade stated in evidence:

"Very plainly, and frankly, when the purchases were made by our Department, we had not gone into the various elements which constitute the price. I am sure that if one central purchase organisation is responsible for these purchases, they would probably take all these into account and they would also take the advice of the various technical authorities concerned in arriving at a conclusion whether the price quoted is reasonable or it involves an evasion. I should say very frankly that when the original purchases were made, there is no evidence on the file to show that such detailed enquiries were made, to find out whether the prices quoted were absolutely the lowest price to be paid, or whether there was any element of evasion of tax or of other types of revenue."

3.80. The Committee asked whether before accepting the special stipulation regarding payment of price in terms of dollars, the Ministry of Commerce had consulted the Ministry of Finance. The Secretary, Foreign Trade stated:

"At the time of purchasing these machines, most of the foreign suppliers were insisting on some parity with the dollar

because of the violent fluctuations in currencies in developing countries and also because of the possibility of devaluation. In the normal course, no purchase should have been made of an item available in India, that is, a non-imported item, with the clause of dollar rupee parity in it. But, in this particular case, IBM appeared to be insisting on that and appeared to be following it as a regular pattern with all its customers. Therefore, if I may say so, the CCIE had to accept these terms of IBM, because there was no other way of getting this."

3.81. In reply to a question whether this particular clause was brought to the notice of higher echelons in the Government, the Secretary, Foreign Trade stated:

"This particular clause was then known to the Ministry of Commerce. I am not quite sure whether the Ministry of Finance was given an opportunity to go into these terms. While going through this issue—and this is only a supplement to what I am saying—I found that the DGS&D itself had entered into a contract with a similar payment clause about rupee dollar parity. Of course, I am not saying that what happened later could have been an example for something which happened earlier. I am only saying that this had been a common practice with the DGS&D or with other purchasing departments at that time at least with IBM machines."

3.82. When the Committee pointed out that the acceptance of such a clause was extremely strange and undesirable, the Secretary, Foreign Trade stated:

"I agree with you. That is why later a decision was taken by the Government not to have this type of clause and that payments should be only expressed in rupees."

3.83. The Committee asked the Ministries/Departments to indicate the basis for the fixation of hire charges by IBM/ICL. From the replies received it is seen that the Ministries/Departments had no idea as to how the rentals were fixed by the supplying firms. The Central Statistical Organisation (I.S. Wing) Calcutta has stated in this connection:

"The basis for the fixation of hiring charges has been determined by the concerned firms (monopoly business) and accepted with the consent of the competent Authority."

The Registrar General of India has stated:

"The firm has monopoly in this field and hire charges are as per their terms."

The Director of Economics & Statistics has stated:

"The hire charges quoted by the firms are applicable to all other users in the country."

The Department of Commercial Intelligence and Statistics has stated:

"The basis for the fixation of hire charges by the firms is not known to this Department. It is, however, understood that the firms have been charging 'one time installation charges' to recover the import duty on any imported component of the machine."

3.84. In regard to 'one time installation charges', the Department of Electronics has, in a written note, stated:

"On a query with Messrs, IBM World Trade Corporation they had clarified the basis for 'one-time installation charges' as under:—

"One-time Installation Charges are comprised of all costs associated with the moving of the equipment from the supply source to the customer locations. These costs include casing and packing, freight, insurance, rigging and drayage, customs duties, clearing and handling expenses, etc. These costs, which are not recovered in the international base price are recovered separately from the customers on actual or average basis."

On further clarification, IBM have informed that duty elements on imported components in respect of indigenously manufactured equipments were also recovered through such one-time installation charges.

Such duty elements should get included in the *ex-factory* prices of the equipment. This aspect has also come up for consideration by the Inter-Ministerial Group going into the prices/rentals of IBM and ICL and will get elaborated in their Report."

3.85. The Railway Board had informed the Committee (1973-74) that:

"The basis on which rentals for computers were fixed by IBM is not available with us. To a subsequent query the firm have, however, clarified as under:

"IBM's rental and purchase prices throughout the world and in India are standard and uniformly applicable to new or modernized equipment. The monthly Availability Charges (commonly known as rental) are based upon the equipment availability and machine service and not on the status and/or age of the equipment i.e. new or modernised machines."

3.86. The Committee desired to know whether there had been, at any time, a critical review and evaluation of the agreements entered into by Government Departments with IBM/ICL with a view to ensuring that money's worth was obtained by way of adequate service. In a note, the Department of Electronics explained:

"According to information currently available with the Department of Electronics, review and evaluation of agreements entered into by Government Departments with IBM and ICL have been carried out by some Government Departments primarily with regard to the performance of the equipments and the maintenance and other support obligations contracted for."

3.87. However the replies elicited from other user Ministries/ Departments indicated that no such review had been undertaken because the services rendered by these companies were considered to be quite satisfactory as they were prompt in attending to the occasional mechanical defects and periodic servicing of the machines.

3.88. In regard to the review of contracts entered into by Railways with IBM, the Committee (1974-75), in paragraph 1.8 of their 165th Report had observed:

"The Committee note further that the Railway Board have initiated a dialogue with the IBM with a view to exploring the possibility of revision of the current contracts with a view to obtaining terms more favourable to Railways. The Committee would like to emphasise that in the light

of the critical analysis made by them in their 127th Report the Railway Board, while negotiating with IBM will do its best to ensure that a satisfactory new contract emerges as a result."

3.89. In their action taken note furnished to the Committee on 2-12-1975, the Railway Board have intimated:

"The Railway Board have carried out prolonged negotiations with the IBM for obtaining more favourable terms and as a result thereof, some significant concessions have been obtained. The negotiations with IBM started in May, 1974. Initially, IBM were found unwilling to consider any change in the terms of the contract and soon it appeared that the matter was beyond the competence of the local IBM Management. However, as a result of the pressure sustained by the Railway Board, some senior officials of the local IBM Office proceeded to their Head Office in New York to seek instructions in the matter. As a result, the IBM came up with a proposal in November, 1974 to reduce the rentals of all the computers of 1400 series by approximately 11 per cent w.e.f. 1-11-74 (this reduced the rentals paid by the Railways by about 11 lakhs per annum) it may be pointed out that while the reduction in rentals offered by the IBM was the outcome of the Railways Board's discussions with them, the concession had to be offered by the IBM to all its customers in India, whether in the Government or in the public/private sector, thereby resulting in a substantial saving for the Government and public sectors.

The reduction offered by IBM could not be called meagre in absolute terms; nonetheless it fell much below the expectations of the Railway Board. The matter was also reported to the Department of Electronics, as also to the Inter-Ministerial Working Group appointed to look into the business practices of the computer Firms in India.

Subsequently, on 27-5-75 the IBM came forward with a further reduction of rentals w.e.f. 1-6-75. In total, the reduction now offered by them (including the reduction offered earlier) comes roughly to 31 per cent of the rentals (about 30 lakhs per annum for all Railway installations)."



3.90. The Committee regret that their examination of this wide-ranging issue has brought out some distressing features. Except for a few instances, almost all Departments had purchased computers/data processing equipment directly and not procured them through the Director General of Supplies and Disposals, although the General Financial Rules and the provisions of the Manual of the Director-General of Supplies and Disposals, required such procurement to be made through DGS&D only. One of the common explanations advanced was that the computer and other data processing equipment obtained by the user Departments having been of a proprietary nature, it was not considered necessary to route their requirements through the DGS&D. The Secretary, Department of Supply, however, was good enough to go on record before the Committee that even in the case of 'proprietary items' the user Departments should have asked DGS&D to procure it. The Secretaries of the Departments of Supply, Foreign Trade and Expenditure have also conceded that it was a mistake on the part of the user Departments to have ignored the existing procedure and they should not have resorted to direct procurement from the supplier firms, without seeking special exemption from DGS&D.

3.91. Another somewhat disconcerting feature of the multifacet story of Government's acquisition of computers is that barring a few Ministries all others had procured the computer/data processing equipment without floating any tenders on the plea that such items were of a proprietary nature. The exceptions have been (1) The P & T Department who obtained the computer from Elliot Bros. after floating global tenders (2) Chief Controller of Imports and Exports, (3) Overseas Communication Service, (4) Department of Commercial Intelligence and Statistics—whose tender enquiries, however, were restricted only to International Business Machines and International Computers Ltd. The Committee recall that during evidence, the Secretary, Ministry of Communications vouchsafed his opinion based on the experience gained in their own purchases, that by inviting global tenders better terms than those given by International Business Machines could have been obtained.

3.92. Another significant lacuna noticed by the Committee is that whereas under the General Financial Rules the Ministries are expected to route their purchases through D G S & D, they do not, in cases of hiring, have to go through that filtering process. Several Departments of the Government were seen to have hired computers/data processing equipment by direct negotiations with the sup-

pliers. This happened in spite of the view of the Secretary of the Department of Supply that hiring was inter-linked with the economics of purchase and it was desirable to entrust both these activities to DGS&D.

3.93. From the information furnished by various Departments it appears that except for a few recent acquisitions reliance has been placed almost entirely on the western countries and the markets in the socialist countries have not been adequately explored. The representative of the Department of Electronics during his evidence admitted that this had perhaps been due to gaps in the information available to Government till 1972 about computers/data processing equipment that could be procured from the USSR. This does not seem particularly valid, since Indo-Soviet relations have been growing over the years and a Soviet computer appears even to have been presented to the Indian Statistical Institute during the fifties. It is needless also to point out that purchases from the USSR and the socialist countries of East Europe had the additional advantage of being covered by bilateral trade agreements. The Committee trust that the Department of Electronics will in future, while processing the requisitions for procurement of such computers/data processing equipment for Government Departments as are not manufactured within the country would explore the possibility of importing them on competitive terms from countries including USSR and other socialist countries.

3.94. The representative of the Department of Expenditure in defence of the procedure followed by the Departments in purchasing hiring computers, data processing equipments etc. directly from IBM/ICL stated during the course of evidence:

"If we now consider that they did not have enough knowledge of computer technology or that they did not know computer software well enough and they allowed themselves to be spoon-fed by IBM salesmen, the Finance Ministry was certainly in no better position to adjudicate between one proposed computer system and another.....  
By hind sight or better analysis now we say that if in 1968 a suitable group of computer specialists had been got together to analyse the alternative software systems and then gone out to a world bid and taken an Italian or Bri-

tish computer, we might have saved 50 per cent of the money over the period. It is in that way that the Committee notices a lapse. If that is so, I think this must be true, but the amounts involved though substantial were not so large that in every case it was necessary for such an elaborate procedure to be adopted to find out possible alternative world sources."

3.95. While the representative of the Ministry of Finance may well feel called upon to defend the action taken by his predecessors, the fact remains that there have been many serious loopholes in the matter of processing the requests of Government departments| Ministries/Organisations for a acquisition of computers, data processing machines etc. Quite a number of such examples have come to the notice of the Committee, only a few of them being mentioned below:

- (1) As already mentioned in Chapter II no clear-cut guidelines for determining the necessity or otherwise of computer, data processing machines etc., had been laid down. The result was that justifications were prepared and processed in an 'ad-hoc' manner with the result that 'captive' computers have come to be procured for departments| Ministries where the work-load hardly justifies them: e.g. Registrar-General of India, Heavy Vehicles Factory, Avadi; Vehicle Factory, Jabalpur etc. (For details please see Chapter IV).
- (2) The feasibility of utilising the facility in a common computer centre, or in conjunction or in association with other user departments does not appear to have been critically gone into. For example, the requirements of U.P.S.C. and the Institute of Secretariat Training and Management, New Delhi (which work under the Department of Personnel) could have been served by one data processing facility.
- (3) The requirements were not spelt out in broad specific terms to facilitate determination, by an expert Government agency department, the number and type of units including data processing equipment, software etc., which should go to make up the computer system so as to minimise the capital and recurring cost.
- (4) The Government departments did not take any concerted or determined measures to go into the reasonableness of

the terms of agreement for purchase hire of computers as offered by IBM/ICL. In this context the Committee would like to point out the astonishing instance where the charges for computers were allowed to be specified in American dollars with the result that heavy amount of Rs. 20 lakhs had to be paid by the Railways and other Government departments after devaluation of the rupee in 1966 till the position was rectified in 1968 at the instance of the Comptroller and Auditor General who had insisted that the charges should be expressed in terms of Indian currency. This was a glaring example of an expenditure which could and should have been saved by the exercise of proper care and fore-thought.

3.96. The Committee desired to know whether the reasonableness of the terms offered by IBM/ICL had been gone into by the Departments before signing the Agreements. Replies received from some of the departments frankly admit absence of any such scrutiny. For example, the Department of Commercial Intelligent and Statistics stated: "No attempt has been made in the past to examine in detail the reasonableness of the terms and conditions of the contract before the agreements were concluded. The terms and conditions of the supplying firms have been accepted since it was said that they were the same to the customers throughout India." The Overseas Communications Service has stated: "No legal opinion was sought for before entering into the agreements with IBM. At that time it was not considered necessary to do so on the basis that other users Government Departments and Public Sector Undertakings had accepted similar standard terms and conditions offered by IBM." The DGS&D has stated: "There was no attempt made to examine in detail the reasonableness of the terms and conditions."

3.97. It was therefore only natural that the powerful multinationals should have taken full advantage of this extraordinary complacency and apathy on the part of the user Government Departments. Apparently, the aggressive and also skilful salesmanship of the formidable multinationals persuaded them to go in for hiring of computer systems, the hard core of which largely consisted of outmoded and used machines in 1401 series which were only spruced up and refurbished and hired out at a fabulous margin of profits. The Committee would like to point out that when the Railway Board in 1974 and 1975, in pursuance of the recommendations of the

Public Accounts Committee, took up seriously with IBM the revision of hiring charges for the computers, they were able to effect, to begin with, a reduction in annual recurring rental charges to the extent of Rs. 11 lakhs in November 1974, followed by a further reduction of Rs. 19 lakhs in May 1975. This is a pointer not only to the Railways earlier lack of care but also to the fact that by a meaningful and determined effort, Government, which had at its disposal the expertise of the Department of Electronics, the Electronics Corporation of India, Research Institutions, and the Cost Accounts Branch of the Ministry of Finance, could and should have been able to fix reasonable charges for acquisition of computers right in the beginning and avoided the costly lapses which have burdened the country's exchequer.

3.98. While examining the representatives of the Government Departments on the pros and cons of hiring vis-a-vis purchase of computers/data processing machines, the Committee came to know of certain apprehensions voiced by the User Departments. For example the Overseas Communications Service has stated that "the capital investment on outright purchases is too high", while DGS&D have drawn attention to "budgetary restrictions" as a reason for hiring the machine.

3.99. The representative of the Department of Electronics hinted at larger problems when he stated during evidence that "hiring seems to be an expense which can be incurred whereas investment on computers by outright purchase calls for certain additional levies etc. in terms of taxes". While this question cannot at this point be discussed at any depth, the Committee are of the view that the Ministry of Finance should have taken critical note of whatever fiscal constraints were there and should have sought to resolve them to the extent possible.

3.100. The attention of the Committee has been drawn to the expertise required for keeping the computer system in serviceable condition and the high cost demanded by the multinationals for spares. The Committee feel that if Government had taken serious note of these and other allied difficulties it should have been possible, with the help of the Department of Electronics/Electronics Corporation of India, to devise suitable servicing arrangements as most of the computers in operation are supplied by one company and are located in Delhi. It should not have been too difficult also to persuade the multinationals with the help of factual data about the imported cost of spares, to charge no more than reasonable prices for the parts required.

3.101. The Committee would like Government to take concerted measures without further delay, so that all constraints in the way of a rational decision about the purchase, instead of hire, of computer systems are eased out in the country's interest.

3.102. One of the chief arguments given in support of the concept of hiring is that the machine could be replaced at any time or dispensed with. This provision in the Agreement should be put to effective use by undertaking a critical review of the use to which the existing computers, data processing equipment, etc. have been put. The Committee have elsewhere recommended that computer and other sophisticated machines in a situation like ours should be pressed into service only where these are required in the interest of scientific advancement or technological and production gain but never merely as a labour saving device.

3.103. The Committee, therefore, urge that the use of computers, data processing equipment, etc. may be given up where it does not conform to the afore-mentioned criteria. Where, however, the equipment is required in the larger public interest, a detailed analysis should be carried out about the units required for working the system. The effort should also be to procure computer, data processing equipment, etc. from public sector units, (e.g. the Electronics Corporation of India) who have already developed a fair amount of capability in manufacturing and marketing such equipment. In this context the Committee would like to draw attention to the well-known fact that there is still a high margin of profit available to the multi-nationals in the peripheral and supporting equipment. The Committee need hardly point out that with advancement of knowledge as well as what is termed 'knowhow' and technical capability in the country, it should be possible to replace, largely if not entirely, at least the data processing equipment and other peripheral and supporting equipment by that of indigenous manufacture, preferably from the public sector.

3.104. Where, however, it is not possible to replace the equipment by indigenous production, Government should examine in depth, with the help of the Department of Electronics and the Ministry of Finance (Cost Accounts Division), whether it would be more advantageous to purchase the needed equipment outright rather than hire it. Wherever it is found necessary to purchase the equipment outright, it should be procured from indigenous firms as already recommended earlier. But where it has to be imported, tenders should be invited from well-known and reliable suppliers of proven standing. Competitive quotations should be called for before selecting the best equipment on the basis of performance, economics, etc.

3.105. Where it is considered desirable to continue to retain the equipment on hire, the terms should be most carefully scrutinised with the help of the Department of Electronics and the Ministry of Finance (Cost Accounts Division) so as to secure the most competitive rates. As mentioned earlier the Railway Board have been able to re-negotiate the terms for hiring of computers and equipment with the IBM in pursuance of the Committee's recommendations and thereby secured a significant saving of about Rs. 30 lakhs per annum.

3.106. The Committee would like to be informed of the precise action taken in pursuance of these recommendations in respect of computers, data processing equipment, calculating machines, etc. which are in operation in various Government Departments/Ministries.

3.107. The Committee stress that Government should issue clear guidelines to the effect that all future requirements for computers, data processing equipment, etc. would first be got examined in the Department of Electronics with reference to the criteria laid down. Where it is considered absolutely essential in public interest to go in for computers, data processing equipment, etc. these should be preferably procured from the public sector units and failing that from indigenous firms. Where computers, data processing equipment, etc. are to be purchased or hired from a multi-national, this may only be done centrally by the Department of Electronics who may be assisted suitably by the Cost Accounts Branch of the Ministry of Finance.

## CHAPTER IV

### EXTENT OF UTILISATION OF COMPUTERS

#### A. Extent of utilisation

##### (i) Computers

4.1. The Committee called for information from the user Ministries/Departments regarding the actual utilisation of the computers during the past five years (or since installation if the computers had been installed within the preceding five years) in terms of meter hours. The information furnished by the Departments is given at Appendix VI. On the basis of the information furnished by various Ministries/Departments the average monthly utilisation of each computer in terms of meter hours has been worked out as shown in the table below:

*(Average monthly meter hours utilised)*

S.No.	Name of Department	1971	1972	1973	1974	1975
1.	Indian Meteorological Department	—	—	—	139	225
2.	Department of Space I	—	285	371	315	348
	II	—	204	249	271	308
3.	Air India	324	333	393	403	406
4.	Indian Airlines I	319	280	290	277	—
	II	—	229	271	319	—
5.	Planning Commission	307	342	360	272	380
6.	Registrar General of India	181	163	281	196	127
7.	Heavy Vehicles Factory, Avadi	—	62	87	83	84
8.	Vehicle Factory, Jabalpur	—	45	116	139	145

4.2. It would be seen from the above that whereas meter time utilisation is fairly high in the case of computers in the India Meteorological Department, Department of Space, Indian Airlines, Air India and Planning Commission, the average monthly usage of computers in the office of Registrar General of India, Heavy Vehicles



Factory, Avadi and Vehicle Factory, Jabalpur is below the minimum of 176 hours for which payment has to be made at contracted rates. In the case of Indian Meteorological Department the meter hour utilisation in 1975 is high but in the year 1974 it is below the contracted hour.

4.3. On the question of computer utilisation, the study made by the Administrative Staff College of India on the Indian Computer scene, after pointing out that the arithmetic mean of monthly current usage per installation (in Government, Private and Research and Development) works out to about 200 meter hours which is considered to be quite favourable observes:—

“The average or total usage of installations alone may not be a sufficient indicator to the extent of total computational power in the country, because the capabilities and speed of the installed computers are widely different. However, this serves as a good base for understanding the utilisation of the computers in India.”\*

4.4. In regard to utilisation of computers in Space Organisation, the Secretary, Department of Space stated during evidence:—

“The primary use of computing equipment in the space research is essentially connected with two broad aspects. There are many activities but I would mention specifically two of them to illustrate, namely the launching of rockets for exploration of outer space and the controlling of data on satellites which cannot be done by human beings manually because the time scale available is extremely short. The rockets are tested on the ground. The normal kind of period for which a rocket is fired lasts only a few seconds and you have a mass of information to be obtained about the reliability of rocket system. The bulk of our computing equipment is meant for these purposes, for direct scientific and technical work.

There is a second aspect which concerns the analysis and design aspect of the systems on which we do research. Here, you require scientific computers in order to be able to handle very large number and complex differential equations and other scientific mathematical processes which, again, if they were to be done by hand, would take several years. But with computers, you do it in a matter of hours or days.”

\*Gopalakrishnan, P. and Narayanan, K. S. Computer in India an overview, P. 61.

He added:

"In the Department of Space, let us take the trajectory of a rocket system which is being planned to orbit a satellite. It is not possible to do it by any other means except by a computer. Therefore, from the very beginning, the introduction of computers into our organisation was a sort of endemic thought in the process of doing the particular job itself. Our utilisation requirements have been actually exceeding what we had planned. So, we have had to expand the peripherals of computer utilisation. Apart from doing the specific job for which computer was introduced, one positive factor of its introduction has been almost the immediate taking up of problems which could not be thought of as being tractable. Complex problems in which as many as 25 parameters were there used to be simplified to the order of 5 or 10. With the introduction of the computers, the work of our young engineers and scientists has improved significantly both timewise as well as qualitywise, particularly in things like failures, which are always part of new activities."

4.5. On the use of computers in the Ministry of Tourism and Civil Aviation, the Secretary, Tourism and Civil Aviation informed the Committee during evidence:

"We have computers in two fields—meteorology and air line operations. In the former, the use of computer is more of a scientific nature... On the air line operations side, we have the business type computers for the obvious reasons that in the air lines they are used as tools of management, inventory control, getting timely management information etc.... On the subject of economy I was going to make the point that when a computer is used as a management tool as, is being done in the IA and Air India, we need to ask not only about economy in terms of what it would have cost had it been done by other means, either manual or through some intermediate technology between manual and computer, but also about the other pay-offs which come from better management through use of computers as a management tool, for instance in inventory or other directions in which the computer can be used."

4.6. The Committee asked whether as a result of computerisation, the quality of weather forecasts had improved. The Secretary, Tourism & Civil Aviation stated:

“Here the computer was meant to be used for prediction of weather through numerical models. It was anticipated even at that time that it would take 3 or 4 years for working out a suitable numerical model—even a simple one to be worked out it would take that much time. We are at the present moment at that preparatory stage. They are doing a great deal of work in an effort to identify or work out a satisfactory numerical model. They feel, with the present target, that they should be able to have one such model. It would not be satisfactory in the beginning but ultimately it would be satisfactory. The first model they would be working out would be by April 1977. They are hopeful to achieve that target but even after that it will take another 3 or 4 years because that would have to be further developed and tested. The reason for this is that even in advanced countries where weather prediction has moved over to computer base, it has taken some years before various parameters are worked out and identified.”

4.7. Explaining the significance of the numerical models, the witness stated:

“It is a conceptual model. This work could not be done unless you had a computer because so much data is to be fed and quickly interpreted and the objective is to get weather prediction valid for the next 24 hours. That brings in the time factor also. So it is our view that this computer was necessary for us to get on to the level of weather technology required for accurate prediction. We have seen in our day-to-day experience that the computer has not led us to better weather prediction so far and the reason for this is that we are still in the preparatory stage. It is only when the models have been developed of factors which influence weather or create weather in the Indian sub-continent that we will be able to get more accurate weather prediction.”

4.8. Commenting on the utilisation of the Computer in the office of the Registrar General of India, a representative of the Ministry of Home Affairs stated in evidence:

“The data processing of the Registrar General’s office is now

divided into two parts. One portion of the data is processed manually, and thereafter, it is fed into the computer. If the entire data had been computerised from the very beginning, then, the set-up would have been different and we would have required more computers. This was not available. That is why, some portion of the data is processed manually and then the cards are punched and then the data is transferred to the tapes. From the tape, the data is retrieved to various cross tabulations. Therefore, data processing is done manually as well as through computers."

4.9. The Committee asked whether any savings had accrued as a result of the use of computer. To this the witness replied:

"It is difficult to mention the extent of saving as such. As I have explained, certain portions are manually done. The information has to be transferred to the cards, they have to be punched and verified and put on the machine. At this stage the computer does not come into the picture at all. The staff for that has to be there and is there."

He added:

"After the data is punched by the manual process we can normally get only one table, but if you want to cross-classify that data, you will have to go through this entire process again every time, whereas with the computer you can get it straightaway."

4.10. The Committee desired to know whether, in view of the improvements stated to have been achieved as a result of computerisation in the census organisation, the use of computer by the Registrar General of India could be considered indispensable and entirely justified. A representative of the Ministry of Home Affairs stated:

"That is what we find, because once a table is prepared, a number of cross tables are prepared out of that, which is not possible without the computer. If you want 30 tables, you will have to go over it 30 times by the manual process, but here when the information is fed into the computer, it has only to be retrieved."

4.11. The Committee pointed out that census takes place only once in 10 years and there may not be enough work load to justify the use of a computer throughout. The witness replied:

"The work load is definitely there continuously in the early stages. Now it is coming down. As we have mentioned in our note, we are now utilising some of the computer time for doing work for the other departments."

He added:

"When the computer was hired, a certain work load was assumed. By and large that work is coming to an end. Now there are two options. One is to give up the computer as soon as the residual work is over, or to utilise it for some other purpose."

4.12. On being asked whether the computer was being used for one time applications and if so could not this have been done by sharing time with other computer users instead of hiring it, the representative of the Ministry of Home Affairs stated:

"It is not being used on one time applications. The data has been stored and it is now being retrieved for various cross-classifications under each heading. For storing also we require some time. After the storing is done, it is used as and when necessary for retrieving the information . . . . As soon as our work was completed, we have had a lot of other demands. For example, Police, BSF and some other sister organisations of the Home Ministry wanted some time on our computer. As soon as our work was completed and there was time in between, we had made available that time to these organisations. So, the computer is kept fully engaged."

4.13. It was stated that for the last 6-8 months the computer time was being shared with other Ministries/Departments as Census organisation was 'not requiring it for full time now.'

4.14. The Committee asked whether before acquiring the computer any perspective plan in regard to the utilisation of the computer by the Registrar General and other organisations was drawn up. To this the representative of the Ministry of Home Affairs replied:

"I have gone through the papers and find that there is no perspective plan as such. When the work comes up, we do it. But we have been assessing our requirements. As

and when our needs are coming down, we utilise the computer for some other purpose.”

4.15. In a note subsequently furnished to the Committee, the Ministry of Home Affairs have stated:

“During the preparatory stage the R. G.'s office processed the Greater Kabul census data on its computer. The Government of India had agreed to assist the Government of Afghanistan by processing its census data in India and the obvious choice fell on the R. G.'s office. This was done during 1967-68. This exercise gave our data processing personnel a unique opportunity of having trial runs on the computer with actual census data and gain confidence.

Between 1968 and 1974, the Registrar General's computer installation did only census jobs, except for duplicating data tapes for the use of other departments occasionally. The time taken on the computer for duplication was negligible. By the end of 1974, the work on storage of data on tapes had been completed with the help of the computer at the office of the Registrar General and after hiring computer time (3048.54 hrs.) from Railway at different centres and secondary processing of the data for preparation of tables had started. Secondary processing would not have needed the entire capacity of the computer. The department had two courses open, either (i) to step down capacity of the computer from 16 K to 8 K or (ii) to assist sister organisations of the Government to get their computer oriented jobs done on the R.G.'s office computer. The second course has resulted in an overall economy particularly so because the Registrar General's Office is able to avail of the concessional rental (30 per cent of the hourly normal rental if the computer is run beyond 176 meter hours in a month). During 25 months out of the 59 months between 1971 and November 1975 the computer was used for 2,214 meter hours beyond the stipulated period on payment of 30 per cent of the normal hours rental.”

(ii) *Other data processing equipment*

4.16. The Sales Unit of the Commercial Broadcasting Service of AIR acquired a full complement of Data Processing Machines, i.e. Punches, verifiers, sorters, reproducers and tabulators at a cost of Rs. 4,14,851.85 including incidental charges. The machines were fully in position in July, 1974 and were, after that, only being used for training the existing staff and preparation of schedules and bills on trial basis. The maintenance charges @ Rs. 1504 per month are being paid to ICL since January, 1975.

4.17. During evidence the Committee were informed that the data processing machines have not been utilised so far. Explaining the reasons for the non-utilisation, a representative of the Ministry of Information & Broadcasting stated:

"It has not been used, because we had put in proposals for some staff. Earlier in 1974, the Finance Ministry felt that there was some ban on staff. They had certain reservations. They said that if we use a computer, there should be a corresponding saving in staff. When the AIR went in for computers, commercial centres were fewer. Now there are 15 centres. The Finance Ministry felt that we should go in for some savings rather than ask for the sanction of additional staff. We are going to the cabinet for extra staff, because initially for 6 months or so we have to put in extra trained staff."

4.18. In justification of the purchase of these machines it was stated that 'as per the instructions from the Hon. Minister and the Secretary, Information & Broadcasting at the time of commencement of the Commercial Broadcasting Service in Bombay, the proposal for the purchase of computer was initiated.' Asked whether 'the machines were acquired only because orders were given from above, the representative of the Ministry of Information & Broadcasting stated:

"It is not entirely correct to say so. We were ourselves looking into this aspect. When the commercial broadcasting service was inaugurated at Bombay on 1st November, 1967, this matter may probably have come up before the Minister, but we do not find any written instructions or orders from the Minister. The first proposal from the then Director Sales at Bombay was received by the DG AIR in January, 1969."

4.19. The Committee pointed out that there had been no proper assessment of the requirements and the machines thus acquired remained unused for nearly 2 years. As to the reasons for this unutilisation, the witness stated:

“That is unfortunately the fact. The question of staff is there for the last 2 years; and earlier, we had the problem of installation, air-conditioning etc. As a result of these the machines could not be used.”

4.20. In a note subsequently furnished at the instance of the Committee, the Ministry of Information & Broadcasting have stated:

“Only data processing machines have been acquired. The machines were delivered by the suppliers in January, 1973. To keep the machines, space of about 1200 sq. ft. was required. Central Sales Unit were short of accommodation. They had to sort out this problem. Immediately after the delivery of the machines Central Sales Unit also took in hand the work relating to air conditioning of the hall where machines were to be kept and operated and of obtaining electric connection for the machines. After the electric installations were completed in April 1974, DG S&D conducted series of inspections and, after the discrepancies and shortcomings noticed in the machines were rectified by the suppliers, the DGS&D cleared the machines and handled them over to Central Sales Unit in July, 1974 for operation. The suppliers advised that the transfer of work from the conventional system to the machines accounting system would have to be phased over a period of 8 to 9 months.

The Central Sales Unit proposed that technical staff be sanctioned for the operation of the machines. The initial reaction to this proposal in the Directorate General of All India Radio, Ministry of Information and Broadcasting and Ministry of Finance was not favourable because it was felt that, on the contrary, the mechanisation of the accounting system in Central Sales Unit should render some of the existing staff surplus and result in savings. Therefore, efforts were made to spare some of the existing staff for being trained on the machines and finally for being entrusted the operation



of the machines. However, Central Sales Unit found it increasingly difficult to spare the staff because of the increasing work on account of increasing business. In the meantime, Commercial Broadcasting Service was introduced from five new centres covering eight more stations of All India Radio (Patna, Ranchi, Bhopal, Indore, Trivandrum, Jaipur, Jodhpur and Cuttack) with effect from 1st May, 1975 without any additional staff to Central Sales Unit. With this disappeared whatever little feasibility there could be of sparing some of the existing staff for operation of the machines. The Internal Work Study Unit of the Directorate General, All India Radio, also supported Central Sales Unit's demand for additional staff at least for some time so that the accounting system could be switched over to the machines and, thereafter, the position of the staff could be reviewed. There was, however, a ban on the creation of non-Plan posts.

The present position is that with the concurrence of the Ministry of Finance, a proposal has been made on 16th January, 1976 for the creation of certain posts in relaxation of the ban orders. If the posts are sanctioned, it is hoped that the machines will be put to use shortly in a phased manner."

### *Computer Centres*

4.21. In view of the large investments (with a significant proportion in foreign exchange) involved in setting up computer facilities and ensuring optimum utilisation of the manpower in those facilities, the Department of Electronics had *inter alia* stressed that all users should first attempt to meet their in-house requirements through computers available in the Indian market and additionally draw on the facilities offered by the Regional computer centres. The Department of Electronics has encouraged installation of large common user facilities in various parts of the country such as Delhi, Bombay, Calcutta, Madras, Poona and Bangalore. It is seen from the Annual Report of the Department of Electronics for the year 1974-75 that:

"The capabilities of the computer installed at I.I.T. Madras, have been enhanced so as to enable taking on additional work-load till more facilities are installed in that region. Detailed analysis are also underway to assess the computer facilities required for the Poona and Bangalore

regions. The UNDP financed National Centre for Software Development and Computing Techniques at Bombay will be fully operational during 1975-76 with the arrival of the main computer system in April 1975. The Regional Computer Centre at Calcutta will be operational during 1975-76; all work necessary for placing final orders for the Computer System has been completed.

UNDP have accepted in principle the proposal for setting up a National Centre in Delhi for data management and to finance the hardware needed and to provide fellowships, experts etc."

4.22. The Committee enquired whether any assessment of the savings resulting out of centralisation of computing facility had been made and whether the feasibility of extending the principle of centralisation of computing facilities had been studied and the findings thereon. In a note on the subject, the Department of Statistics (Computer Centre, New Delhi) have stated:

"The advantages of a large and powerful computer *vis-a-vis* a number of small or medium in-house computers are quite obvious. A large computers offers lower cost per unit of throughput compared to a number of smaller computers, giving together an equivalent throughput. There are in addition, intrinsic capabilities of a large computer which cannot be obtained from a number of smaller systems. Experience of computer operations so far has adequately demonstrated that centralised management of operations brings about efficiency as well as economy in the utilisation of resources, particularly in reducing under-utilisation of computer time which is bound to occur with in-house installations during the initial period of operations. It will also be possible to exercise effective control over the operational environment which is a crucial factor of computer management.

The availability of a large system encourages growth of sophisticated applications including development of software which calls for computers with high speed and large storage. Training, research and development can be organised more effectively and promotional activity gets a better impetus. One of the principal advantages of a central service facility in Government is the possibility

of integrating the data-piles of organisations which have inter-dependent functions of data collections and data use and sharing of information among them. The process of building up large data bases for Government use is greatly facilitated; storage and retrieval of information can be done with speed and accuracy.

Operations of a central service facility will, in no way, inhibit initiative of customer organisations in the development and execution of their individual applications. They will continue to have Systems and Programming personnel of their own who will be responsible for their EDP activities. Each organisation will have uninterrupted access to computer facility according to pre-assigned priorities. Features of multi-programming and time-sharing as well as powerful executives, ensure optimal scheduling of the system which is not possible with smaller computers. Centralisation is limited only to the extent of providing computer time, offering facilities of training, developing integrated information systems and operating a large data bank.

In view of the capabilities of a large sized computer for offering lower cost per unit of through put and for providing a better impetus of EDP activity in various Government offices, this Centre has submitted a proposal for the acquisition of large sized computer as a common service facility in the Government."

#### **B. Areas and Applications computerized so far**

4.23. The Committee called for information regarding the areas and applications computerised so far in each Ministry/Department. The replies furnished by different Ministries/Departments are summarised below:

##### *(1) Ministry of Tourism & Civil Aviation*

##### *(i) India Meteorological Department*

"To begin with, it was essential to develop Numerical Models readily applicable to the Indian latitudes which were just not available, as the models developed by other advanced countries did not cover the tropical regions adequately. It was also essential to train our scientists in programming and in numerical weather prediction. After this has been done, the computer is to be used for actual weather forecasting.

The experiments so far conducted on the computer consist of the various steps that would lead to weather forecasting by numerical methods. The first step of data automation involving transfer of a large volume of observations received from Moscow, Tokyo, Melbourne, Cairo, Bangkok etc. and from the Indian stations to the computer, has been solved. Programmes have also been developed to identify any errors in observations caused during transmission and correct them.

The next important step is objective analysis. All mathematical models require values of the meteorological parameters at regularly spaced grid points. As the position of the meteorological observatories do not coincide with these grid points, a complicated system has to be evolved for deriving the grid point values. A fairly satisfactory method has been developed for such objective analysis, though the ocean areas are still presenting a problem. Internal consistency has been ensured between the values derived at neighbouring positions and at different levels in the atmosphere."

(ii) *Air India*

"The computer system is being used for preparing certain time-bound statements such as interline bills, pay-rolls etc. and also for providing a wide variety of reports for use by various levels of Management in the different functional areas like Marketing, Planning, Inventory of spares, Engineering Maintenance Base, Personnel Management and Accounting. The information provided is used for controlling and monitoring the activities of the Corporation as well as for decision-making. For decision-making, the information provided in the form of reports by the computer is taken together with the information available from the external sources and further analysed before arriving at a solution. This is not the same as a solution automatically provided by Electronic Computers using mathematical models where various alternatives are evaluated and the optimum solution is determined and presented by the computer itself."

(iii) *Indian Airlines*

"At present, the following jobs have been taken on the computer:

(1) **Advance Reservations**

- (2) Inventory of Stores and Spares
- (3) Commercial Statistics
- (4) Billing for Credit Sales
- (5) Control over Realisation of Book Debts
- (6) Revenue Accounting
- (7) Pay Rolls
- (8) Personnel Information
- (9) Rotable Control (under implementation)"

## 2. Ministry of Home Affairs

### (i) Registrar General of India

"The areas and applications which have so far been computerised at the 1971 census are listed below:—

- (a) One per cent national sample (both rural and urban) of individual slips (5.5 million records).
- (b) Hundred per cent data from the degree-holder and technical personnel cards (2.2 million records).
- (c) 20 per cent sample data from the houselist (28.8 million records).
- (d) Hundred per cent data from the establishment schedules (10.2 million records).
- (e) 20 per cent sample data from urban individual slips (26.5 million records).
- (f) Four per cent sample data from the census population record (35 million records).
- (g) Hundred per cent primary census abstract and village directory data (Total volum 1.8 million records. Work still in progress).
- (h) Five per cent sample from rural individual slips (Total volume 24.0 million records. Work in progress and will be completed in 1976).
- (i) Fertility survey (1.0 million records)..

### (ii) Central Bureau of Investigation

"The areas covered by computerisation pertain to the maintenance of crime records. These are disseminated to the State police forces all over the country in different forms

according to the needs of investigators relating to each type of offence."

3. *Department of Personnel & Administrative Reforms Institute of Secretariat Training & Management*

The machines are being used for producing items of work|jobs listed below:

1. List of particulars of each candidate.
2. Alphabetical Register.
3. Accounting of fees received.
4. Break up of candidates.
  - (a) Centre-wise break-up.
  - (b) Sex-wise break-up within each centre.
  - (c) Medium-wise break-up.
5. No centres cases.
6. Non-payment of fee/payment of past fee.
7. No Medium cases.
8. Candidates belong to SC/ST.
9. Roll No. Blocks.
10. Preparation of Admission Certificates.
11. Preparation of attendance sheets.
12. Preparation of results etc.

4. *Planning Commission*

A wide range of problems have been solved through computer including (a) bulk data processing and statistical analysis for various types of censuses and surveys (b) econometric analysis and solution of planning models, and (c) Scientific and engineering computations. Following are the most important areas and applications of the electronic computer in the Planning Commission:

1. Plan Formulation
2. Project Appraisal
3. Evaluation
4. Plan Information System

5. Urban Transportation Planning.
6. Other uses in the Planning Commission.

#### 5. Department of Statistics

- (i) *Central Statistical Organisation (I. S. Wing):*
  - (a) Annual Survey of Industries—Census Sector
    - (i) Summary Results; and
    - (ii) Detailed Tables.
  - (ii) Computer Centre, New Delhi

The Computers installed at the Computer Centre have been used by various Government organisations and Public Sector Undertakings in and around Delhi. The Jobs of these organisations fall under four broad groups;

- (i) Bulk Data Processing applications. A substantial part of the jobs belong to this category.
  - (a) Statistical Tabulation and Analysis of data
  - (b) Tabulation and Analysis of Census and survey data
  - (c) Material Management
  - (d) Budget, Accounts and Billing applications
  - (e) Banking applications.
- (ii) Information Storage and Retrieval
  - (a) Personnel Records and Career Management
  - (b) Records of Crimes and Criminals
- (iii) Management Information System.
- (iv) Scientific Engineering and Statistical application.

#### 6. Department of Space

The areas and applications computerised are generally as under:—

##### (A) *Vikram Sarabhai Space Centre*

- (i) Orbit determination programmes consisting of study of spin conditions. prediction of life time of earth satellites,

visibility contours for ground based radars; drift, perturbation and other conditions, etc.

- (ii) Trajectory optimisation programmes optimising either the altitude, range or payload for a given fuel.
- (iii) Estimation of aerodynamic coefficients, analysis of vehicle dynamics, fin design and pre-flight and post-flight analysis of trajectories for various types of rockets.
- (iv) Stress and stability analysis by finite element techniques, dynamic analysis of plate & shell structures, design of heavy steel structures, thermal stress analysis for nose cone, heat shield etc.
- (v) Satellite design studies.
- (vi) Control and guidance applications, electronic circuit analysis, design, optimization and simulation studies on electronic sub-systems.
- (vii) Study and design of launch vehicles for synchronous satellites.
- (viii) On-line usage for data acquisition and control.

**(B) ISRO SATELLITE SYSTEMS PROJECTS (*Aryabhata & SEO*)**

Check-out of electrical and electronic sub-systems of the satellites. Orbit determinations.

**(C) PHYSICAL RESEARCH LABORATORY:**

- (i) Problems arising in the course of research activities relating to analysis of cosmic ray data, solar data, fluctuations of the geo-magnetic field, electron density in ionosphere, analysis of isophoto maps and maps of air-glow intensity etc.
- (ii) Umkher calculations for zone
- (iii) Problems of theoretical Physics, requiring solutions of differential and integral equations, matrix diagonalisation etc.,
- (iv) Providing computational facilities for research workers of other institutions
- (v) Processing remote sensing data of the Space Applications Centre.



## 7. Ministry of Commerce

### (i) Department of Commercial Intelligence & Statistics

"Mechanised compilation has been introduced in the areas of foreign trade, shipping (gross weights of cargoes moving in foreign trade) and coastal trade.

The main applications of mechanised tabulation are in regard to the preparation of:

- (a) commodity-country tabulations separately for exports, re-exports & imports showing countrywise shares of trade under each commodity (These tabulations form the basis of this Deptt. publication 'Monthly Statistics of Foreign Trade of India: Vol. I (Exports re-exports) & Vol. II (Imports).
- (b) country-commodity tabulations separately for exports, re-exports and imports showing commodity-wise particulars of trade with each country—[these tabulations form the basis of this Deptt. publication 'Supplement to the Monthly Statistics of Foreign Trade of India: Vol. II, which is a quarterly publication].
- (c) annual tabulations of item-country trade (at 4 digit RITC code levels) in a calendar year separately for the exports, re-exports & imports. (These tabulations are required for the use of the United Nations Statistical Office. The tabulations along with the relevant cards are sent to them once a year).
- (d) portwise tabulations showing India's trade by air in different commodities separately for exports, re-exports & imports (A separate cyclostyled brochure is being issued showing these statistics since 1975).
- (e) Sectionwise and Divisionwise (as specified in the RITC) trade of India with countries classified by economic regions. (These statistics are published in the Vol. I of the Supplement to the Monthly Statistics of Foreign Trade of India along with data on Trade in principal commodities, Trade of Customs Zones, Balance of Trade, etc).
- (f) annual tabulations showing India's Coastal trade in certain specified commodities for each port|maritime block.
- (g) Supply of a duplicate set of reproduced cards for imports every month to the Computer Centre, New Delhi, to enable

them to undertake special tabulations for the Ministry of Finance.

(h) Compilation of commoditywise exports of India by post."

#### 8. Ministry of Information & Broadcasting

(i) *Audience Research Unit*

The machines are utilised for tabulating the data of field surveys conducted by various audience research units.

(ii) *Central Sales Unit, Commercial Broadcasting Service.*

- "(a) Maintenance of individual ledger accounts of the accredited and recognised agencies; canvassers and other advertisers who come directly;
- (b) Acceptance of Contracts—Cataloguing relevant data from accepted contracts;
- (c) Preparation of discount statements to be allowed to every advertiser to whom discount is payable;
- (d) Preparation of pay rolls for staff working in the Central Sales Unit;
- (e) Preparation of statements of actual time sold over the various Commercial Broadcasting Service Centres, revenue earned from spots and sponsored programmes and tabulation of other statistical data relating to commercial Broadcasting Service operations."

#### 9. Ministry of Communications

(i) *P & T Board*

The electronic computer is being used in all the major areas of R&D work in Telecommunication Research Centre. All the R&D staff in TRC (numbering over 200 at present) are making use of the computer wherever detailed and accurate computation is necessary in the design of telecommunication systems and equipments.

(ii) *Overseas Communications Service*

"The Unit record Machines are used in OCS for preparation of revenue accounts in respect of Telephone, Telex and Telegraph services as under:—

- (a) Abstracting of daily based data at Branches consolidation of data in CTAS, pricing and preparation of accounts for

Telegraph, Telephone and Telex services for accounting with foreign Administrations.

- (b) Processing accounts statement for above services for submission to Indian P&T Department.
- (c) Preparation of routewise and Administrationwise, monthly, quarterly and annual statistics."

#### 10. D.G.S. & D.

"The areas and application of computerisation of data in the DGS&D broadly cover:

- (a) pre-A/T processing of Indents;
- (b) orders and supplies statistics;
- (c) post-A/T progressing of contracts;
- (d) disposal statistics.

In addition, *ad-hoc* information as and when required for administrative purposes is also brought out from time to time."

#### C. Savings effected in wages and Quantification of economies of computerisation

4.24. The Committee called for details of the savings in wages, if any, effected as a result of acquisition of the computers and data processing equipment by Government Departments. The replies furnished by the Ministries/Departments are indicated below:

##### 1. Planning Commission

There has been no savings in wages.

##### 2. Ministry of Heavy Industry

The computers were not intended to be labour saving devices. The main purpose of obtaining computers was to solve technical manufacturing problems and to facilitate the research and development work.

##### 3. Department of Space

The question of savings effected is not applicable as the computers are not utilised in substitution of manual labour.

#### 4. *Department of Personnel and Administration Reform*

##### (i) *Institute of Secretariat Training and Management*

The machines were procured for examination work and the question of saving of wages does not arise.

##### (ii) *U.P.S.C.*

No assessment of the savings in wages effected as a result of the acquisition of these machines by the Union Public Service Commission has been done but on a very rough estimate, it can be said that the man power needed to handle the work done by the machine would have cost the Government much more per year.

#### 5. *Ministry of Commerce*

##### (i) *Department of Commercial Intelligence and Statistics*

If the work of statistical computation under new procedure on the basis of new S.I.T.C. classification was to be done normally instead of machine thrice the number of staff existing prior to these machines would at least be required. The use of machines is definitely much cheaper.

##### (ii) *Chief Controller of Imports and Exports*

There has been a saving of Rs. 1.43,500 during the first year i.e. 1967-68 in wages as a result of the acquisition and installation of IBM Machines.

#### 6. *Ministry of Home Affairs*

##### (i) *Registrar General of India*

When data is to be processed manually, comparatively larger number of persons are needed, but no figure can be furnished to indicate the savings which have resulted as a result of installation of computer.

##### (ii) *Central Bureau of Investigation*

Processing of information on data machine and the utilisation of facilities offered at the computer centre involves substantial saving of money/wages.

## 7. Ministry of Tourism and Civil Aviation

### (i) India Meteorological Department

Immediately these are no direct savings in wages. But the computer is enabling the IMD to develop techniques of Numerical Weather Production which would not be possible without a computer.

## 8. Ministry of Industrial Development—DGTD

The system introduced for the first time in a modest scale, it, however, does not effect any direct savings in wages.

## 9. Ministry of Irrigation and Power

### (i) Central Water and Power Commission (Water Wing) Central Flood Forecasting Directorate

It was possible to effect saving in the overtime paid to the staff.

### (ii) Poona Research Station

There is no question of saving in wages at Central Water and Power Research Station as a result of the installation of the card punch, which is an essential instrument for scientific research.

## 10. Ministry of Information and Broadcasting

(i) The machines were procured in July, 1974. The actual savings in wages will be available only after the machines have been put into use.

## 11. Department of Agriculture

### (i) Directorate of Economics and Statistics

As manual tabulation was not resorted to any stage, it would be possible to indicate only a rough estimate of the likely saving in wages as a result of acquisition of the mechanical tabulation equipment. At current wages and prices, the savings are estimated at Rs. 3 lakhs or so per annum.

## 12. Ministry of Communications

### (i) P and T Board

The question of savings in wages does not arise on the computer was not obtained for replacing bulky manual working, but was for Research and Development.

(ii) *Overseas Communications Service*

No savings in wages as such in terms of money have been effected, because the staff deployed for doing manual work earlier are not doing the machine accounting process.

13. *Department of Statistics* . . . .(i) *Computer Centre, New Delhi*

No information on savings in wages effected if any, is available. It may be noted in this connection that the computerisation was not introduced with the objective of saving in wages but with a view to obtain improved and more comprehensive information.

(ii) *Central Statistical Organisation (I.S. Wing) Calcutta*

The savings in wages effected because of Unit Record Machines cannot be estimated as all along the equipment was in use.

4.25. From the above it would appear that no attempt has been made by Ministries/Departments to assess quantitatively whatever economies are stated to have been achieved as a result of computerisation. Only the Central Bureau of Investigation has stated that the processing of information on data machines and the utilisation of facilities offered at the Computer Centre involved substantial saving of money on wages. The Directorate of Economics and Statistics has also attempted to work out the actual savings effected as a result of acquisition of the mechanical tabulation equipment and stated that "at current wages and prices, the savings are estimated at Rs. 3 lakhs or so per annum." The Chief Controller of Imports and Exports has stated in his connection that "there has been a saving of Rs. 1,43,500 during the first year i.e. 1967-68 in wages as a result of the acquisition and installation of IBM machines."

4.26. During evidence, the Committee asked the representatives of the CBI whether there was any insuperable difficulty in the way of quantifying economics, achieved as a result of computerisation. To this the representative of the CBI replied:

"As far as we are concerned, we have calculated it on a very simple basis. The basis is that one dealing hand can prepare about a thousand cards per year if it were to be done manually. At present, in our Crime Records Section, we have only 12 persons to do all the work. If we had not gone in for computerisation, we would have required

many more hands. These 12 persons could have prepared only about 12,000 cards per year. Now, we are preparing about 60,000 cards per year."

4.27. In reply to a question as to what was the difficulty in the way of quantifying economics achieved as a result of computerisation, the Secretary, Department of Expenditure stated in evidence:

"For non-scientific use of computers, the proposals have to be put up, that is, for installation of computers for statistical and accounting work. It requires a feasibility study to be made to quantify the estimated savings effected as a result of computerisation assuming it could also have been done manually. Sometimes, the actual work could not, in fact, be done manually. If it could be done manually, then it is to be quantified what will be the saving effected as a result of computerisation.

I would say, here, that these savings are only potential savings. These are not savings in the sense of actual savings as per the existing manpower. The general policy of the Government still remains that the computers are not installed to save existing manpower. These are potential savings."

4.28. In this context while referring to the computerisation of census data, the Secretary, Home Affairs stated:

"We have also, on the basis of some of the other requirements worked out how much time the manual process would have taken and how much time it would have taken otherwise and also, what is the position cost-wise and we have found that, cost-wise, whereas tabulation of the data in regard to some of the activities would have cost about Rs. 8.5 crores, for five or six processes the figure comes to about Rs. 4 crores and 6 lakh.

Many other things have been worked out, but I have referred particularly to the one per cent national sample and degree holders and technical personnel data and a few other things of this nature."

4.29. When it was pointed out that from the experience of the Registrar General of India and the CBI it would appear that it was

possible to quantify the economics effected, the Secretary, Department of Expenditure stated in evidence:

“I think in cases where it has been taken up on a limited scale it should be possible to quantify the cost and benefit. But when you come to a big thing like the Census organisation and the data collected by it, may be in certain processes it is possible to quantify the entire thing, but where there are many variables involved therein, it would not be possible to give you the correct figure. To give a general idea in regard to few processes I believe is possible, but it would not be possible to work out in regard to the entire organisation because, for working out for 80 tables at the all India level—with each table requiring a number of cross-classification tables—it would require a huge exercise as there are many other factors which have to be taken into consideration at the same time.”

4.30. To a suggestion from the Committee whether the Ministry of Finance would consider the idea of quantifying the economies effected by the use of computers etc., the Secretary, Department of Expenditure replied:

“Since we have access to the Planning Commission’s computer, we do on that our work project appraisal and feasibility studies. I would certainly welcome your Committee’s help in enforcing on my sister Ministries the discipline of quantifying the benefits and the costs of any investment of the magnitude involved in installing a computer. I am sure that the Department of Electronics would also welcome a direction from the Committee that, for all future investments, this kind of qualification should be attempted, if it is not already being done. One has to have the norms of cost, the alternative costs by using manual or electrical methods, because you will appreciate that it is not always a choice between people scurrying round with quill pens and installing the latest IBM computer. There are intermediate stages of technology. One of our problems is to fit the investment precisely to the kind of requirement that there is. There are many cases of data collection and data analysis and retrieval where a simple electrical system would be better for that size of operation than a large



computer or may be, for that particular size of operation, a small computer would be better than a large computer. It is part of the exercise which, I believe, the Department of Electronics is attempting to do—to fit the particular requirement of investment to the particular job taking into account the kind of social factors that the Members have mentioned. I think, the Government is fully aware of the requirements of labour-intensity and of choosing the appropriate type of equipment and not going in for the largest or the most impressive or 'the most modern' system for a particular thing."

#### D. Results achieved after Computerization

4.31. Many of the Ministries/Departments stated that the results anticipated from the installation of computers/data processing equipment had been achieved. The Committee asked each Ministry/Department to furnish a note indicating the tangible benefits that have accrued as a result of the installation of computers and other data processing equipment with particular reference to the concrete benefits in terms of economy effected or efficiency achieved. Replies as furnished by Ministries/Departments are reproduced below:

##### (1) Ministry of Tourism and Civil Aviation

##### (i) India Meteorological Department

"Results achieved so far are:—

- (i) Training of the personnel initially required for the work has been completed.
- (ii) Programmes for identification and scrutiny of data received on teletype have been satisfactorily developed.
- (iii) Two different methods of machine analysis of meteorological data have been developed.
- (iv) Much progress has been made towards developing numerical prediction models suitable for our tropical area.

When the experiments reach a conclusive stage, operational weather forecasting will be made on the computer.

It is difficult to qualify the benefits accrued so far as a result of application of computer in a direct manner. However, it is expected that when the experiments being conducted

on the development of numerical weather prediction models reach a conclusive stage, it will improve the quality of weather forecasts supplied to various user organisations such as agriculture, aviation, navigation, space research etc.”

(ii) *Air India*

“Computerisation has led to improved efficiency of the operations in Air India in different ways. It has made it possible to provide the Management with up-to-date information on the performance of the Corporation in a wide range of operational characteristics promptly, which would not have been possible otherwise. In a number of cases, the non-availability of prompt information would lead to unfavourable balances in foreign exchange, excess inventory or non-optimal use of resources such as aircraft hours, seat capacity and cargo capacity. Existence of a centralised computer system has enabled prevention of increase in specialised staff at various stations abroad involving payment of salaries in foreign exchange to nationals of other countries. The existence of computer system enabled Air India to cope up with the frequent changes in the procedure of computation of fares decided by IATA from time to time. It has also enabled Air India to exchange traffic information for traffic pooling arrangements and also supply government with information for bilateral negotiations with other governments. Financial analysis of revenues, costs and profitability has enabled Air India to evaluate the economic feasibility of continuing the existing flights and routes or introducing new flights on different routes and to evaluate the performance of different stations and regions. It has also facilitated the evaluation of different fares offered by Air India and to take decision wherever such fares were found unprofitable. Delays in analysing the performance of the Corporation from various points of view, would lead to delays in taking decisions in vital areas such as schedule, planning, pricing and ordering and result in substantial losses which are avoided by prompt information. Each of the items of information require processing of massive and presenting the final results in the form of simple cost performance indices to the Management which would not be possible with a manual system without considerable

delays and compromise in the quality of output. This benefit of computerisation has been primarily in the area of providing such concise and relevant information for the decision making leading to the improvement in the quality of decision-making. However, in many cases it would not be possible to quantify such improvements in specific terms and even where such quantification is possible, it cannot be ascribed solely to the computer system since such improvements are brought about by a variety of factors including the availability of information for decision making and control."

(iii) *Indian Airlines*

Although it is difficult to quantify in specific terms all the advantages secured by IA because of computerisation, some of the benefits are listed below:

In the area of Advance Reservation IA have been able to improve the response time appreciably in spite of the increase in workload which would not have been possible in the manual system. Because of computerisation it was possible to increase the central control from 15 days to 8 days before departure of the flights. It may be mentioned here that the growth of Indian Airlines would have been considerably slower and foreign exchange earnings considerably less if advance reservations had not been taken on the computer. Even one additional passenger per flight generates an additional revenue of Rs. 12 lakhs per month.

In the case of inventory control review period has been brought down to one month as against six months in the manual system resulting in reduction in inventory holdings to the tune of Rs. 75 lakhs. In addition purchases to the tune of about Rs. 50 lakhs could be avoided during initial provisioning of certain HS-748 spares.

As a result of computerisation of Boeing 737 inventory from the very beginning IA have been able to keep it at 12 per cent of the fleet value as against generally accepted 20 per cent of the fleet purchase price.

With the help of computers, it is possible to raise bills on credit parties within two/three weeks from the date of sale and also have an effective computerised credit

control system which could not be introduced in the manual system. This has helped in bringing down the book debts from over 6 months to only 2—2½ months resulting in saving of about Rs. 4 lakhs per month on interest charges.

## 2. Ministry of Home Affairs

### (i) Registrar General of India

“Computerisation has effected both economy and efficiency. All-India advance estimates covering almost the whole range of the census tabulation programme based on a one per cent sample could be brought out in 1972 itself. The tables relating to degree-holders and technical personnel were also released at the all-India level round about the same time. It would not have been possible to do so without computerisation of the data. The basic data having been stored more and more savings will come with more and more secondary processing. The cost on input preparation will not have to be incurred again. In fact, secondary processing of data on the basis of the one per cent sample tape has been done for fertility tables and age distribution of central government employees. The latter estimates were required in connection with the implementation of the recommendations of the Third Pay Commission with regard to group insurance of central government employees. Secondary processing with the house list data tape for the Konkan region of Maharashtra and different cross-classifications with the 20 per cent and one per cent data by tapes for some selected towns have been done. Special tables for Bastar and the Dangs were prepared with the house list and establishment data tapes.

Details of computerised data have been furnished. If we had handled all those jobs manually, it would have cost us Rs. 8.53 crores as against about Rs. 4.78 crores, spent on the computer till September 1975. Computerisation has thus effected economy to the extent of more than 40 per cent.

### (ii) Central Bureau of Investigation

The switchover to mechanisation and subsequent computerisation, has resulted in substantial notional savings of

expenditure that would have had to be incurred on the extra deployment of manual labour necessary for the increased workload. The number of index cards prepared from 1968 to 1974 comes to 4,60,328 which works out to an average of 65,761 cards per annum. Before mechanisation/computerisation, on an average one dealing hand could prepare 1,000 index-cards per year. On the basis of output during 1968 to 1970, 21 extra hands would have been required if the work had to be done manually. During the period of computerised work, at least 50 additional dealing hands would have been required to handle the average workload had the work been carried on manually.

The notional savings effected are shown in the following chart:

	1968-69-70 (Mechanisation Stage)	1970-74 (Computerisation Stage)
	Rs.	Rs.
<b>EXPENDITURE</b>		
Average rental of Data Machines	62,000	17,300
Average expenditure on hiring of computer	—	66,800
Average wages for additional ministerial staff	—	50,400† (6 hands)
Average wages for staff for Data Section	33,600* (7 hands)	42,000† (5 hands)
<b>Total :</b>	<b>95,600</b>	<b>1,76,500</b>
<b>Savings</b>		
Averages wages of extra man-power anticipated in manual system Net Notional savings £	1,08,000* (21 additional hands) Rs. 5,200/PA	4,20,000† (50 additional hands) Rs. 2,43,500 PA

\*@Rs. 400/- per month (average).

†@Rs. 700/- per month (average).

£The savings indicated are only notional.

### 3. Department of Personnel and Administrative Reforms

#### (i) Union Public Service Commission

"It has been possible to handle various items of work pertaining to the conduct of the examinations held by the Com-

mission speedily and efficiently and adhering to the time schedules only because of the introduction of these data processing machines. It can be said with certainty that the introduction of these machines has been economical because the expenditure on handling these jobs annually, even at much lower rate of efficiency, would have been much more. There would also have been a much wider gap between the dates of the examinations and the declaration of the results thereof. One added advantage of mechanisation is to ensure secrecy of results and maintenance of proper record of examinations. In view of the very large number and complex jobs handled on these machines depending on individual requirements, it is not possible to quantify the benefits achieved in more specific terms."

(ii) *Institute of Sectt. Training and Management*

"When the work of certain examinations was transferred from the UPSC to the Institute, it was expected that the Institute would have to deal with nearly 15,000 applications. The various examinations entrusted to the Institute are held at regular intervals (Monthly, Quarterly, Half-yearly and Yearly) according to a predetermined time-schedule for each examination in the time available. It may be mentioned that the number of applications has risen from 23,000 in 1971 to 72,000 in 1975, and it would have been physically impossible to handle the huge volume of work relating to the examinations without the aid of these machines. The purpose for which these machines were installed, namely, smooth and timely conduct of these examinations and declaration of results in time, has been fully achieved.

At the initial stage, when the question of mechanisation was examined, it was expected that roughly 15,000 applications would be received for the Clerks' Grade Examination, 1971. On the basis of this work-load, it was estimated that the expenditure on salaries of staff would be Rs. 36,000 per month if the whole work were to be done manually. As against this, the expenditure on the hire of machines and the salaries of the operational staff was estimated to be Rs. 9,300/- per month. Thus, the anticipated savings by installation of machines were expected to be Rs. 26,700 per month or Rs. 3,20,000 (approximately) per annum.

The number of applications has been steadily increasing over the years and it has reached 72,000 in 1975. Had the work not been mechanised but done manually it would have been necessary to increase the staff 4 times with consequential increase in the expenditure. At present, the expenditure on the hire of machines and the salaries of the staff operating the machines is less than Rs. 2,00,000 per annum. If the work were to be done manually, the expenditure on salaries of the staff would be approximately of the order of Rs. 17,00,000 per annum."

#### 4. *Planning Commission*

"The installation of the electronic computer facility has enabled the Planning Commission to carry on the work for plan formulation, formulation of the planning models, processing of the data of evaluation studies, undertaking exercises for the appraisal of projects, and such other tasks, subject of detailed comments above. For the Planning Commission, the computer is not a labour-saving device but is an indispensable tool for efficient execution of its tasks, since the problems to be dealt with are not capable of being handled efficiently without such a facility. With the passage of time increasingly sophisticated applications have developed in the regular basic work of the Commission."

#### 5. *Department of Statistics*

##### (i) *Central Statistical Organisation (I. S. Wing)*

"By the use of the Unit Record equipment, it has been possible to bring out the summary and detailed results of the Annual Survey of Industries and Small Scale Industries with a reasonable time lag. Without this facility the work would have been unmanageable and the time lags much longer. Infact a stage has been reached when the unit record equipment is unable to cope up with the work loads particularly in undertaking a detailed scrutiny of primary information and providing for appropriate analysis of the results."

##### (ii) *Computer Centre, New Delhi*

"Computerisation has resulted in the production of faster and more comprehensive and accurate statistics, such as, Income-tax statistics, Excise statistics purchase, and

tabulation of Census and Survey data, Consumer Price Index Numbers etc. Computer applications at the Centre may be classified under the following four groups:—

- (i) Bulk Data Processing applications (A substantial part of the jobs) belong to this category—
  - (a) Statistical Tabulation and Analysis of data.
  - (b) Tabulation and Analysis of Census and Survey data.
  - (c) Material Management (IAF)
  - (d) Budget, Accounts and Billing applications.
- (ii) Information Storage and Retrieval
  - (a) Personnel Records and Career Management
  - (b) Records of Crimes and Criminals.
- (iii) Management Information System (D.G.S.D.)
- (iv) Scientific and Engineering applications (C.W.P.C., Deptt. R & D).

Besides participating in the development of the above applications, the Computer Centre has been actively engaged in conducting regular training courses for officers of Government Departments, Computer Programming, Systems Analysis and Design and Computer maintenance. About 50 officers have taken advantage of this training and more than 600 programmes and 50 Computer maintenance engineers have been trained by the Centre. These have helped in judicious promotion of computer applications in Government.”

#### 6. Department of Space

“The question of effecting economy or achieving greater efficiency due to computerisation does not arise as the computers were procured and used for work which could not be undertaken otherwise than by using computers.”

#### 7. Ministry of Commerce

##### *Deptt. of Commercial Intelligence and Statistics*

“The straight tabulation of commodity-wise data for individual countries separately for exports and imports was the first stage to be achieved immediately after mechanisation. The detailed manipulation of data was intended to



be introduced gradually over a period of about three years. The original anticipations have since been achieved.

The actual work-load reached has been above the anticipations and, to meet this extra volume of work, the Machine Tabulation Unit has been augmented from time to time either through the addition of more machines, or through the replacement of slower machines by faster machines. The details of these replacements have already been given in the original note.

It may in this context be pointed out that the original plan was meant primarily for mechanisation of foreign trade statistics i.e. statistics of exports (including re-exports) and imports. The plan of work and the subsequent anticipations depended on the replacements of the machines of those days. However, with the large scale expansion of foreign trade and increase in its importance and demand for detailed data by the government agencies and by research organisations and by trading public, further expansion of work has taken place, which is over and above the anticipated work-load at that time. These requirements had to be attended to, to the extent possible, from the existing available resources.

Secondly, in addition to the foreign trade statistics, the department deals with the Inland (Rail and River-borne) trade, Coastal trade, shipping statistics, Customs and Central Excise Revenue Statistics, which were not included for mechanisation at that stage and have not been included in mechanical tabulations so far. At times these data have to be subjected to mechanical processing, thereby adding an additional load on the machine Unit. Thirdly, apart from what was anticipated at that time foreign trade statistics can and should be subjected to much more rigorous detailed analysis, which has not been possible because of load of routine tabulation work."

#### 8. Department of Agriculture

##### *Directorate of Economics and Statistics*

"Under the scheme for Improvement of Market Intelligence, weekly data on market arrivals, trade stocks, etc. in res-

pect of 22 important agricultural commodities are being received in the Directorate from about 1,300 markets in the country. The data are reported directly by the reporting agencies appointed by the State Governments and posted in these markets. While data on market arrivals relate to full seven days for the week ending Friday, data on trade stocks relate to stocks at the end of Friday. The weekly data are received during the next 6-7 days. During the next 3-4 days comparative data in respect of a smaller number of markets for the marketing season for a few years relating to foodgrains, major fibres and groundnut are processed with the help of mechanical equipment for immediate utilisation in the preparation of policy notes. Data in respect of the other selected reporting markets processed with the help of mechanical equipment become available with a time-lag of two weeks or so.

For a realistic assessment of price situation in the country, study of the trends in market arrivals is essential. Since prices data for week ending Friday generally become available by the next Wednesday, utility of the data on market arrivals lies in their becoming available with a minimum time-lag. The time-lag is of 10 days even with the help of mechanical equipment. It will be much more, if tabulation is done manually. (Mechanisation has also helped in avoiding errors in tabulation).

Each Zonal Railway reports every month data on exports of 19 agricultural commodities from each of the 34 Trade Blocks. Estimates of net imports/exports in respect of State for utilisation in policy notes is possible only by using mechanical equipment."

#### 9. Ministry of Information and Broadcasting

##### (i) Audience Research Unit

"The installation of the IBM Unit Record Machines resulted in elimination of manual tabulation work, gave greater accuracy to the results, speeded up the survey reports and made it possible for Audience Research Unit to present the results oriented to the requirements of the programme planning. These machines of IBM processed 80-column cards, and thus could accommodate more information through multiple punching."

(ii) *Central Sales Unit*

"As the machines have not been put into use so far, the question of intimating the result achieved does not arise."

10. *Ministry of Communications*(i) *P&T Board*

"The computer has been used for scientific calculations required in the design of communication equipment and as such the benefits can be judged only on the basis of the communication equipments which have been developed with the assistance of the computer. The computer has greatly aided in the design of the stored programme control electronic exchanges whose laboratory trials were carried out in 1974 and whose commercial trial is scheduled in early 1977. It has also helped in the design of very sophisticated filters and equalisers used in multiplex equipment as well as in coaxial cable systems of upto 2700 channels. The computer has also been invaluable in the calculations of reflection points in microwave paths and in calculating interferences within and between microwave systems. Traffic analysis, traffic routing and optimiation of location of exchanges are other areas where the computer has helped considerably."

11. *D.G.S. & D.*

"As a result of computerisation of the purchase statistics and installation of various data processing equipment it has been possible to bring out regularly operational control indicators on a monthly basis and various other statements which act as aid to the Purchase Directorates for expediting their purchase, operations, thereby enabling stricter control on various aspects of the procurements. The list of cases where offers expire next month or of cases where delivery period has expired or is going to expire in the following month, list of contracts where supplies are reported completed during the month under reference or supplier-cum-store-wise list of outstanding contracts, etc. enable the Purchase Directorates to take expeditious action where warranted and take quick appropriate decisions. With the help of the data processing equipment i.e. unit record machines, it has been possible not only to reduce the delay in bringing out the Direc-

tory of Government Purchases by about a year but also to cut down the cost of production of the Directory considerably."

4.32. In paragraph 1.17 of their 165th Report (Fifth Lok Sabha) the Committee had *inter alia* observed:

"Keeping in view the wider ramifications of the Purchase or hire of computers etc. from these companies and the unsatisfactory utilisation of these machines as has been revealed by a study of the Railways' computerisation projects, the Committee desire that the Ministry of Finance should immediately set up a committee of experts to examine how far the Government Departments which have incurred huge expenditure on acquiring these costly machines have been able to put them to worthwhile and adequate use."

4.33. During evidence the Committee asked whether there was any organised agency in the Government for coordinating utilisation of all the computers installed in Government Departments and Public undertakings. The Secretary, Department of Electronics stated:

"As far as I know, at the present moment, there is no such information available. In so far as you asked me, whether there was a place where you could have that information readily available on the effective or meaningful utilisation of computers already installed, the point I was making was that upto September we were not concerned with this. That is why we did not deal with it. I was making general point that for the future, I think, we are much better placed. The Public Accounts Committee did ask for the specific information of the nature that you have just described. This was meant to be provided by the Department of Statistics. In fact, they had set up a committee for the purpose. From September, this has been transferred to the Department of Electronics. The Ministry of Finance have told us, "since you are going to deal with the entire work of computers, including those in Government you set up a committee and answer the question which the P.A.C. has put." The

Department of Electronics has now been officially asked by a letter from the Finance Secretary to do this job. In fact, we are setting up this committee. We will let you have the information. You may kindly let us know the period in which you will require this information. We will do it now. We have not done it in the past. This is a clarification that I wanted to make."

4.34. In regard to usage of computers in Government Departments, the witness stated:

"With regard to the specific area of usage in Government Departments, since it was not our responsibility, we had not gone into this in the past. We will now see as to what usage has been made in Government Departments; and what it is likely to be. The usage in Government Departments will equally define similar sort of usage in private and other sectors."

4.35. The Committee had learnt, with some consternation, in 1974 that the utilization of computers in the Railways was far less than originally envisaged and that the computers were not subserving the objectives with which they had been acquired. After scrutinising the action taken by the Railways in pursuance of their recommendations, the Public Accounts Committee observed in their 165th Report (April, 1975):

"Keeping in view the wider ramifications of the purchase or hire of computers etc. from these companies and the unsatisfactory utilisation of these machines as has been revealed by a study of the Railways' computerisation projects, the Committee desire that the Ministry of Finance should immediately set up a committee of experts to examine how far the Government Departments which have incurred huge expenditure on acquiring these costly machines have been able to put them to worthwhile and adequate use."

The representative of the Department of Electronics stated during evidence in December, 1975, that the question of constituting the aforesaid Expert Committee was still, however, "activity", under consideration. The Committee have not yet been vouchsafed the final action, if any, taken in the matter. They are thus driven to reiterate that the Expert Committee should be constituted forthwith and should include, apart from experts in the field, a representative of the Cost Accounts Branch of the Ministry of Finance and at least one highly competent and independent person well-versed in the use of computers and data-processing machines by Government for

administrative, organisational and other related purposes. This Expert Committee should examine in depth the justification for the computers, data processing machines etc., in use in each of the Government Departments, organisations etc. and suggest concrete measures to bring about efficient working, rationalisation and economy. The Committee would like to be informed without delay of the concrete action taken in pursuance of this recommendation and also the results achieved.

4.36. The Expert Committee will be expected to evolve guidelines and check lists in order to ensure that at least in future the requests for acquisition of computers, data processing machines etc. would be examined critically in the light of the guidelines before decisions are taken.

4.37. The Committee emphasise that the Departments|organisations desiring to acquire computers, data processing equipment etc. should make a thorough preparation of their case by identifying in detail the projected tasks and assignments, as well as organising the data to be fed to the computer and training of staff etc. so that the computers, data processing equipments etc. could become effective immediately after acquisition. It is also necessary to have a perspective plan to ensure the optimum utilisation of computers, data-processing machines etc. on a long term basis.

4.38. The Committee stress that there should be a built-in arrangement in the department, organisation etc. for periodical evaluation of the actual use made of the computers, data-processing machines etc. with reference to the hypotheses and parameters on the basis of which they had been acquired. This review should be carried out at least once a year, so that timely remedial measures wherever required, could be facilitated. There should be no hesitation in giving up the use of a computer, data-processing machine etc. where the logic of experience warrants it or where the work could be done more economically by availing of the facilities in a Computer Centre or in another Government department|organisation. It should have also been possible to quantify the gains in financial terms as far as possible and to compare them with the parameters which had been assumed at the time of acquisition of computers, data processing equipments etc. That their continued use could and should be determined with reference to the cost benefit factor is a point which should not be lost sight of.

4.39. The Committee are glad that the Department of Electronics are encouraging the setting up of Computer Centres in metropolitan as well as Regional sites. As these would be medium/large-sized computers with a wide range of capabilities, it is necessary that there

should be meaningful coordination between the computer centres and the users, particularly those belonging to Government and the public sector, so that the information and input and output systems in the computer centres are made to sub-serve the best and widest public interest. The Committee reiterate that they look to the computer not just as a labour-saving device but as an instrument, indispensable in the modern context, of upgrading organisational capability to take well-informed and vitally productive decisions after taking into consideration the present-day multiplicity of relevant factors. For example, there could be highly significant computer study and analysis of our exports and imports with reference, particularly, to the efficacy of incentives given to increase exports of manufactured products and to export goods to new markets, and also the inter-related subject of dis-incentives for imports, so that the country could accelerate the achievement of a self-reliant economy. There could also, similarly, be studies to evaluate the impact of various economic and fiscal measures on the development of the economy in various sectors, so that Government could have useful and timely information on which to base appropriate action. The Committee note that the Department of Electronics have already taken some initiative in the matter of developing an information system in various fields, such as coal, steel, manpower planning etc.

4.40. The Committee would very much like a closer co-ordination between the Department of Electronics and the user Departments. This should help to identify in depth the relevant requirements, particularly those which have a bearing on planning and development and concern more than one department. It may be worthwhile to classify these requirements broadly under three heads:— economic administration, social administration and general administration. There could be compact groups consisting of the representatives of the Department of Electronics and the Departments concerned, so that they could identify the areas requiring computerisation after mutual exchange of ideas and programmes. Similarly, the requirements of computers for the public sector could perhaps also be identified on a sectoral basis with the help of the Bureau of Public Enterprises.

The Committee consider it important to stress that it is only when there is meaningful coordination between the user departments and the Department of Electronics/Manufacturing Units that a computer system programme can be properly designed to serve the public interest in the best way possible, and to avoid the waste, which so often occurs, of the country's talent and treasure.

## CHAPTER V

### DATA SECURITY

5.1. For an expert bent on crime, it is said cracking a computer system's defence is only 'as difficult as doing a hard Sunday crossword puzzle'. According to a story entitled 'Waiting for the Great Computer Rip-off' published in FORTUNE, July, '74, ZARF, a joint project of the U.S. Air Force and MITRE Corporation—a defence research out-fit, is said to have 'subverted everyone of the system's (Multies)\*\* safeguards' which has been designed' with security as an upper most consideration. This is an instance of the vulnerability of the modern electronic data processing systems. Until not long ago computer manufacturers and users saw little reason to fear that an unscrupulous person at one terminal could be able to read, alter or delete another user's data or tamper with the intricate programmes that manipulate this data. But in the recent years even the manufacturers have come to acknowledge that it is not very difficult for some one with a lot of skill to do things like that even with the most secured systems now in existence. Robert Courtney the man responsible for safeguards that go into IBM equipment is stated to have classified computer related risks into 6 categories. Among these he has mentioned the "category that includes remote manipulation of the system by outsiders".

5.2. There are various subtle methods by which unauthorised persons can have access to the information stored in the computers:

"The programmers who write the software can subvert supposed protective features or instal "trapdoors" for subsequent entry. Operators may have daily opportunity to tamper with data or files. Maintenance men may incorporate subversive instructions into the test programmes they employ to test for mal-functions. Wiretaps and various bugging devices can intercept data transmissions or even pick up electromagnetic emanations from wires and terminals. The tappers may use intercepted passwords to "masquerade" as legitimate users, or may even insert "piggyback" data into legitimate transmissions. Sometimes legitimate users borrow passwords to masquerade or

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\*\*A new computer system designed by Honeywell Inc.



browse in other people's files. And persons posing as legitimate users may employ a large repertory of tricks to penetrate operating systems from afar."\*

5.3. In view of our new dependence on foreign multinationals for the supply of computers and other data processing equipment, the Committee wanted to know whether adequate attention had been given towards maintaining secrecy of information stored in various computers from the point of view of security of the country.

5.4. During evidence the Committee enquired whether the Department of Space took any special precautions to ensure that the security implications involved in importing and installing a computer of foreign make were duly considered. The Secretary, Department of Space stated:

"In the Indian Space Research Organization, we take extreme care that not only computers but virtually everything which we purchase from outside fundamentally, are delinked from the person or the company from whom we have purchased. As you are aware, in respect of concerns whose main centre of gravity is abroad, outside our country, and who have representatives in this country, we maintain a very special care that the equipment we use—and this includes computers—is entirely within our own control. We screen our own staff for their integrity. Also access to the places where equipment is repaired or where replacement of a particular part is involved, is in a controlled manner. In other words, the processing is stopped if a person is to come down and instal something which we have purchased; we take care, when he does this, that he is completely cut off from any other information in the centre."

5.5. Asked whether this implied that the Government was alive to the dangers involved in dealing, in regard to sensitive acquisitions with an organisation like IBM and necessary steps were being taken, the Secretary, Department of Space replied:

"I would say 'Yes, except not in a very special sense'. In the last five years or so, we have been fairly aware of the difficult position in which the IBM has been able to place the various parts of the world. We are aware of some of the

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\*Vide "Waiting for the Great Computer Rip off" published in Fortune July, 74

investigations, in particular our own Government's views, concerning how the IBM's operations are to be restricted. In doing so, we have maintained rather a special contract with the Chairman of the Department of Electronics Commission."

He added:

"In our higher management, we take a definite view in this regard. . . . Our maintenance is "in-house" and we do not remain dependent on others."

5.6. Commenting on the technical aspects of the leakage of information through computers etc. the Secretary, Department of Space stated:

"Data-gathering from these computers without the knowledge of the people who are running the computers or a given establishment would require two important elements. The simplest way would be that on what is programmed, the computer is given instructions. This is always by a human-being. The instructions take the form of a code usually called and universally used now as the Fortran Code. You write down the instructions on a set of cards. These take sequences of zeroes and 1s. The processing of the computer recognizes these instructions and carries out the processes. If this programme is known to say, someone-else out-side the organization, he would not be gathering this information at the time when it is processed but he would know that this is being done or this can be done."

5.7. A representative of the Department of Electronics stated in this context:

" . . . . the systems that we have today are essentially batch processing systems and each user has built up data for his own area of control and developmental methodology for processing that information. Security aspects get accentuated when one gets to a computer based information system. The information that we contain in a large almirah of Cards is contained in a single magnetic tape. The aspect of security becomes paramount when we computerise the data. Secondly, the security aspect from the personnel point of view becomes more important because persons are able to handle much larger volumes of information now in a very handy manner. There are possibilities

of information being leaked out due to inadequate security cover. When we get on to the next phase of computer based systems, there has got to be interactions between data generated in different departments which will be brought together and the multiple data files handled on the same system. There is a serious security problem arising out of multiple access on the same computer and one might get information which is strictly not relevant to him. When one gets on to the next generation or computers where large information banks will be brought on to the system, we have to devise very strict methodologies and procedures. There are certain procedures in the computer software itself which take care of the security aspect. There are some code words and names assigned to the users and users are precluded from the data which is not of relevance to them.

Apart from normal material and personnel aspects of security, I would submit that there are computer experts who are working at software to ensure this security and it is a matter which we must take note of and bring about security measures before we embark on large scale information system.

The other aspect is that of maintenance. The manufacturer has an influence on the user. This has been taken note of the Cabinet has approved of setting up the Computer Maintenance Corporation in the Public Sector, and since Electronics Commission was set up the Commission has insisted that computers imported from abroad be maintained in house by the user. The Computer Maintenance will start functioning in 1976, and maintenance of the computer systems being imported will be taken over by the Corporation. This will de-link dependence of the computer user on the manufacturer."

5.8. The Committee wanted to know whether the Home Ministry which has an overall responsibility with reference to security aspect had taken serious note of the matter and has communicated with the different Ministries about what ought to be done and what ought not to be done when computers are acquired. The Secretary, Ministry of Home Affairs, replied:

"As a user Ministry for the computers, we ensure that nothing goes to the computers which has a security angle. About

the Home Ministry's particular role as a coordinator, we have on our intelligence side an organisation which looks into the activities of the various organizations, the kind of role which they are playing and for that matter, it becomes a responsibility to see if there is any such anti-national activity being indulged, or if there is anything which could be a risk to us. That is the particular job of an organization which exists in the name of CIB. That goes into that.

Particularly in relation to these computers, as far as I am aware—and my stay in this Ministry has not been long—I would say, instances of this nature have not come to our notice.”

He added further that every Ministry is supposed to take care of the security aspect.

5.9. The Committee specifically asked whether the Ministry of Home Affairs have issued any special instructions or laid down any guidelines for the Ministries/Departments in connection with the precautions to be taken for safeguarding security while these machines are used. The Home Secretary stated:

“As far as computers are concerned, I am not aware of any such instructions being in existence.”

5.10. The Secretary, Department of Space, elucidating the position in respect of his Department stated:

“As far as Department of Space is concerned, I would like to confirm that we have maintained from the beginning a very special concern about not only the general security but also the computer activities. In this context we have placed certain restrictions that anyone who visits any one of our centres has first of all to be screened, carefully escorted, if he is from outside our organization, by any one of our own people. And no foreigner can enter any one of our establishments without a special permission being given. There are areas in each one of our centres which are out of bounds and we take care without necessarily making a lot of fuss about it. During the installation of the French Computer, for example, we will not allow any body from outside to enter there to meet our people. We send, in preference to their entering in, our own people so

that they know what the computer system would look like. If there are any problems we will tackle them ourselves. The computers are for special purposes and they are linked with other technical equipments which we have ourselves designed. So, there is no question of any maintenance, of the computer or anything of that kind being done by anyone else. We do everything ourselves."

5.11. The Committee asked whether apart from the measures proposed to be taken in regard to data security, any safeguards had already been taken by the user Departments before acquiring data processing equipment from IBM. The representative of the Department of Electronics stated that the security responsibilities were with various user organizations and there were no specific directives in regard to computer security although the normal security regulations do cover this aspect also.

5.12. The Committee then drew attention to the statement of the Chairman of the Board of IBM contained in the Annual Report for the year 1974 which *inter alia* stated that "Data security—the safeguarding of data stored in a computer—is a technical problem and will be one of the basic design criteria for its data processing products". Commenting on the statement, the Secretary, Department of Space stated during evidence:

"The overall IBM operations include two different kinds of data processing—one in which, the computer is bought outright by a user. The computer is essentially a large stack in which you can store information. If the control of this entire system is in the hands of a particular organisation, that is, the hardware, programming and the details of the computer system and there is no access to it by anyone outside, I think, then you have one class of problem. The other is the case when you have a computer which is shared. IBM and many other companies abroad give to the users computers on hire. The entire installation is set-up by the company. It is used in a time-sharing mode or budget sharing mode by a number of users. As far as I am aware the state of the art is such that there is no hundred per cent guarantee that when you have an access to a large computer by a number of agencies then the data cannot be spied upon or information found out by one user about the other. I am not fully in the picture about all the computers in our country. Certainly in the Department of Space there is none such. No

hiring is done from any outside agency. So, technically it is possible but whether it is practical immediately in the context of the Indian scene that would seem to be a bit doubtful because we do not have time-sharing system yet."

5.13. The Committee also drew attention to an article appearing in the Press which stated that a sales representative of a U.S. Electronic Company had sometime back remarked that he knew quite a bit about classified defence projects in India largely because he knew what electronics systems were being imported from his company and knowing what possible use they could be put to he could make a good guess about the capabilities of the systems that the Indian Defence Forces were building. A representative of the Department of Electronics replied:

"As a very first approximation what this report says has some justification. If one looks at an organisation, e.g., an organisation that has a computer with a memory capacity of 60,000 words and another organisation that has a computer with a memory capacity of 10,000 words. The sort of processing done by the first organisation will be comparatively limited. One can make a broad guess about the capabilities of a particular organisation in terms of the resources they have for analysing a particular problem. This would be particularly true with regard to uses which are totally hardware oriented. If it is a piece of communication equipment performing a particular function, one could say: your communication capability is not more than 15 KM or 20 KM. With regard to the computers, apart from the hardware aspect, there is also the software aspect. It is also true that in India we are extracting much more from the computers which were earlier used in western countries, in spite of their limitations because we do some preparatory work manually and we put the computer to much more analytical work. So, while the first presumption may be seemingly correct, with regard to hardware, where software capability is concerned, one cannot attach too much weight to that statement."

5.14. In this context the Secretary, Department of Space stated:

"I think it would be fair to note the following background in relation to the question you have asked. The number of Indian engineers and scientists who know computer systems and who can design them is not quite so small as we sometimes tend to think. The difficulty arises this way.

When they want to design a system, they can put it down on paper. The hardware, let us say, the electronic components and the peripheral systems which are necessary to put it together and to get it working are not all built in the country. So agencies outside the country can take the view that we will use the computer system for this purpose or for getting this information and they can know without the knowledge of the Indian Government. The check against that would be primarily specific designs and systematic control, whether they are Indian or foreigners, of all persons who deal with maintenance and repairs, all persons who have access to the systems. One needs conscious effort to do that. Even then the overall intelligence gathering organisations of agencies abroad are quite comprehensive and information is collated not only about the specific nature of the electronic equipment which goes into the computer or military hardware, but also about other elements. The intelligence agencies put them together. Some of it is even published in technical journals. These are extremely intelligent guesses: there are pluses and minuses to it."

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5.15. After a vivid delineation of certain facts of this picture, the witness stressed that there was the requisite awareness of the dangers involved and observed:

"The overall possibility of espionage or intelligence gathering without the knowledge of other people is really fantastic in electronics; there is a large electro magnetic spectrum from which you can gather this information."

5.16. The Committee then enquired about the chances of security risk in servicing and maintenance of computers by foreign companies. During evidence the representative of the Department of Electronics stated that:

"The maintenance by foreign companies is by Indian personnel; there are no foreign personnel in those foreign companies on maintenance duties. They are in the pay of the foreign company. In the installation, the maintenance engineer is not treated any different from any other outsider. When he comes into the computer installation, he has got an assigned place of work for carrying out maintenance

work. The possibility that if he becomes very friendly with the personnel of the computer, he can get access to information is there. This risk comes strictly under the purview of standing instructions with regard to security of personnel and material."

5.17. During evidence the Committee wanted to know the steps taken by the Ministry of Defence to safeguard that computerisation and the type of electronic devices in the computer performance of our Defence activities do not pose a problem prejudicial to security. The Secretary, Ministry of Defence Production, after giving the Committee an idea of the computers set up in Defence undertakings and research organisations and also broadly, of the way they were worked, added:

"In so far as the security aspect is concerned, the software, which is the heart of the computer, is designed by our people, whosoever the makers are, IBM or otherwise. There are numerous other makes also in use. The makers staff have no access to software. When we call them for maintenance, they look at the problem and put the machine in order again. I believe they bring with them certain tests programmes which check the data system at fault. They satisfy our people that this system is again working in order. Then they go away. As far as working of the computer is concerned, it is entirely left to our people and to that extent, we feel that access to our information, whether it is of the dedicated variety or the general variety, would be entirely limited to our people, to our scientists alone. Outsiders will have normally no access to such information."

5.18. The Committee enquired how it was ensured that the scientists recruited for sensitive work were not to prove amenable to certain influences emanating especially from powerful sectors like the Multinationals. In reply, the Secretary, Department of Defence Production, stated:

"Like all Government servants, the scientific staff in the Defence Research Organisation as well as the technical staff in the RDSO are screened by the police before they are employed. There is the security screening. After that, I do not know what other method they have to keep a watch on these people. But I do believe that their activities are under some sort of an overall surveillance."



5.19. The Committee wanted to know if there were any security arrangements to ensure that the maintenance people for IBM did not get mixed up with our own people who are actually incharge of coding etc. The Secretary, Department of Defence Production deposed:

“They are not there all the time. They are brought in only when the system develops a fault. They would not be in our office for more than a few hours at a time and then they go away. It is like calling a machine.”

5.20. Supplementing the answer, a representative of the Department of Defence Production stated:

“As far as the security was concerned, they could come inside only on special permission as they do in all defence establishments with a special pass and their coming in and going out were always noted. We had adequate precautions to see that they did not have any access to any of our important documents or important information which was stored in the cards or tapes.”

5.21. The Department of Defence Production in a written note sent subsequently stated, as under, in regard to the screening of scientific and technical staff in Defence Research Organisation:

“All the information pertaining to the inventory holdings, production matters etc. are kept completely out of bounds for non-DPS staff including IBM personnel. In the initial stages when the computerisation has started. M/s. IBM have trained various personnel programming and system designs. Though M/s. IBM's help was sought on the various uses to which the computer can be put, they were never associated with any input data. Further the persons who operate the machines are all on the strength of the HVF whose antecedents have been already verified before recruitment. The punched cards cannot be taken out of the Factory in view of the strict security checks that are imposed on all persons coming in and out of the factory. Further the factory programmes which are a must for interpreting any data are written by a few authorised persons only and also these programmes are kept under lock and key. The various managerial reports that are prepared on the computer are distributed to the authorised user sections only and it is ensured that the drafts, carbons, etc. are destroyed. The waste punch cards are defaced before they are disposed off, and they are periodically burnt.”

5.22. The Committee enquired whether M/s. Arthur D. Little, American Consultants, got a fairly exhaustive view of our defence position when they reported on improvements or rectifications in it. A representative of the Department of Defence Production said in reply:

“Mr. Little’s report was a general report which consisted of various aspects of defence production.”

5.23. On further enquiry as to whether the American Consultants who were brought into gear up our defence Organisation had been given details of our defence installations, etc. the Secretary, Department of Defence Production replied:

“Once having brought in consultants, it is very likely that we had to expose before them a good part of our capabilities, so that they could render a report. Otherwise, how could they have rendered a report?”

5.24. The Committee then wanted to know the security checks that are taken against the possibilities of certain devices being implanted into a machine purchased or taken on hire which can pass on messages to an outside agency, a representative of the Department of Electronics stated:

“At the time we purchase the equipment, our own engineers should check up the system completely and make sure that there are no gadgets or devices which are implanted into the machine.

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Then with regard to the question of the security and implanting of certain gadgets within the machine for remote-sensing of data, this cannot happen in our country because these are simple data-processing machines, and more sophisticated items are invariably managed by our own people.”

5.25. A representative of the Ministry of Defence referring to this possibility stated:

“We have marked on this off and on for 13 years but we found no cause for such a doubt.”

5.26. On being informed that what is happening inside a computer at a distant place can be known with the help of a transmitter, the Committee wanted to know the kind of vigilance exercised by the Ministry of Communications which co-ordinates the activities of

transmission including that of Defence. The Secretary, Ministry of Communications replied:

"We have a monitoring organisation in the Ministry of Communications which monitors transmission through wireless in the country. But the scope of this monitoring organisation does extend to monitoring of what we call clandestine transmissions, i.e. transmission on frequencies which are not authorised or licensed. We have a system of licensing of the wireless operations in the country and we keep a watch that people are not violating this licensing procedure, they are not using frequencies which have not been licensed. This system of monitoring by its very nature has got a very limited capability in the sense that if one would expect from the monitoring organisation that every transmission that goes on in the country at any point of time, at any place in the country can be monitoring that could not be technically or physically possible. Monitoring organisation scans the atmosphere and finds out whether any transmission is going on at any frequency and whether that is licensed one. If any particular monitored is not licensed, we probe to see what is going on. We detect quite a number of transmissions which are not all right. Some of these transmissions are by mistake from installations which are regularly authorised at a particular frequency, but by technical fault they transmit on other frequencies which are not licensed. We could detect certain transmissions by so called 'satawalla' who transmit business transactions which are not authorised."

**5.27.** Elucidating the position about the transmission from an area other than that authorised, the witness further stated:

"If the frequency used is one of the authorised frequencies we take it that it is being used by a particular party registered for that particular area. Sometimes, it happens that frequency which is authorised to work in Calcutta area is used in Bombay area and we come to know about it and that indicates that is not authorised. But if the transmission is going on in the Delhi area on an authorised frequency which was licensed, than obviously monitoring organisation would not bother about it unless particularly their attention is drawn indicating that some special monitoring has to be done for a particular purpose."

5.28. The Committee desired to know the views of the Secretary, Communications, in regard to the security aspects involved in our virtual dependence on an organisation like IBM for our data processing requirements. The Secretary, Communications stated during evidence:

"Regarding any international organisation of this type, which is foreign, without mentioning anything specific it could be said that we would not be surprised if we came to know that some foreign multi-national corporations which are operating in our country, adopt certain methods which are not in our national interest. But, as far as any information going out through the fact that they have made such a big inroad in the computer installation in our country is concerned, I might mention that the only way in which they can get information is if we involve them in software development for any particular requirement or application in our country. Whenever we want to use IBM machines, there are two ways of using it. One is that we punch our own information and we use the machine for collating and for getting certain printed results. The other area is where we want to use them for some more sophisticated purposes, in which case we take the help of the IBM group of people. When that happens, we have to supply them information. My suggestion would be that in no circumstances should we use the staff of the Company for applications where we have to give information to them and ask them to develop soft-ware. As far as hardware requirement is concerned, I do not think they could use that information for any specific or particular purpose. The other point which you mentioned this morning was about the possibility of any sort of radiation going out or any sort of high-frequency transmitter radiating out of the computer automatically, which was being used for some national purpose. These are remote because any apparatus which is being used as a high frequency transmitter from a computer could be subjected to monitoring and within a very short period we would know whether any high frequency transmission is taking place. It is not difficult to detect it because that particular transmission has to go into the atmosphere and we can detect it very easily. There are possibilities of a computer being used on hire. For example, you have a computer in Delhi. You want to feed certain information from Calcutta over the communication channel, which the computer could sort out and collate and give the analysts.

In that case, from the communication link even if it was a very classified information, it could not be easily obtained. In our country, the communication links that we are using are the so-called coaxial or micro-wave links. They do not easily permit anybody else getting or extracting information out of them."

5.29. The Committee then drew attention to the observations at page 189 in the book C.I.A. by Victor Merchetti and John D Mens which reads as follows:

"Strictly speaking classical espionage uses human beings to gather information; technical espionage employs machines such as photographic satellites, long range electronics sensors and communication intercept stations. Technical collection systems were virtually unknown before World War II, but the same technological explosion which has affected nearly every other aspect of modern life over the last 25 years has also drastically changed the intelligence trade. Since the war, the United States has poured tens of billions of dollars into developing ever more advanced machines to keep track of what other countries are doing, especially communist countries. Where once an agent sought secret information with little support beyond his own wits, he now is provided with a dazzling assortment of audio devices, miniaturised cameras and other exotic tools."

5.30. Asked to state his views in this regard, the Secretary, Ministry of Communications stated:

"What I feel in Government is that there are two aspects of the matter. One is the machine and the other is the man. In a poor developing country like India which is trying to improve its economy and come to a certain level in the comity of nations of the world, it is very necessary that every man who is working in a sensitive and important position works with definite national dedication. After all, there are temptations to everybody from all sorts of spheres, and it is not temptation from one source only. It is very necessary that the persons who are in important positions, in sensitive positions, who deal with the nation's secrets and development have a certain national app-

roach. Otherwise, the nation cannot rise. That is the main aspect of it, and the other is the machine aspect.

In the machine aspect, obviously it has to be ensured that nobody is able to pick up secret information from our country and use it against us. Communications is a very important matter because we often talk on the telephone, on trunk lines, about secret, classified information. We were aware of the fact of the thing being used against the nation. In that respect, as I mentioned as far as the computers are concerned, my personal view is that if we buy a computer from IBM, it will be very difficult for the company to put in a gadget clandestinely such that the information which is being fed in the computer is just triggered off on a high frequency radiation to be picked up elsewhere for a purpose of this type. That is not possible to do so. As far as our communications are concerned, there are coaxial cables and microwave are not easily tapped. Our microwave systems are quite fool proof in that respect as I mentioned earlier. Wherever people are talking on classified information, we have provided special arrangement either by giving a separate exchange to them or by ensuring that their calls are not monitored by somebody else. For people who deal with classified information, we have also provided secro-phones so that other people are not able to hear it. It is a very important national matter and we have to be very vigilant about it. Beyond it, it would be very difficult for me to advance any suggestion."

5.31. The Electronics Commission in a note to the Committee detailed the need for adequate provision for secrecy and security of information as follows:

"The Electronics Commission and the Department of Electronics fully recognise the need for security of information and since 1971 have been consistently advising various users regarding the security of information where necessary and to the degree found necessary. The security of information, however, should be viewed from another angle also. As a function of the level of secrecy imposed on the data base in a computer, there is a cost associated, i.e. secrecy can be achieved only by investing in secrecy. It is for this reason that the Department of Electronics advises the users regarding appropriate levels of secrecy of different types of data bases. Some of the

mechanisms employed for security of information are briefly as under:

- (a) Hardware keys are available which can be used to lock up operations of data bases in the form of discs, tapes etc. However, it may be necessary to put in some of the hardware locking features with the help of local computer engineers over and above what the manufacturer provides. This is being looked into by the Department of Electronics.
- (b) A number of different types of software keys are also available where codes similar to combination keys are made available to the user. Each user can have his own key in the form of a code best known to him. Even here, local system software people should be employed to develop additional software locking features over and above what has been provided by the manufacturers.
- (c) It is desirable to keep the manufacturers outside the purview of maintenance of computers or at the time of additions of new sub-systems. Setting up of the Computer Maintenance Corporation by the Department of Electronics has already provided the answer to this problem.
- (d) It would be a healthy practice to keep all users away from the main computer installation. Fortunately, the latest technology has provided means for effecting this. It is not possible to connect several remote terminals to the computer so that all users will have access to the larger machine only through the terminals which may be even a few kilometers away. This reduces the unnecessary traffic within the premises housing the main installation. The security of information is now a full-fledged discipline and in the country, and there are a number of Indian engineers who have specialised in this area. A panel of these specialists to advise the Electronics Commission on the security aspects will be set up."

5.32. In the U.K. where there has been perceptible growth of computers in recent years, the problem of ensuring confidentiality of the information stored in the computers has received special attention. The matter has been reviewed at length by a number of

Expert Committees and two White Papers on the subject of 'Computers and Privacy' and 'Computers: Safeguards for Privacy' have been brought out. The Committee gathered that the action has been taken in two directions as a result of these studies and surveys in the U.K.

5.33. Firstly, the British Computer Society and the National Computing Centre have initiated a series of projects designed to increase knowledge and understanding of security and has established a Central Reference Body to provide computer users and manufacturers with information and guidance about security measures. This Central Body is advised by a Committee whose members represent between them all sections of the computer industry.

5.34. Secondly, the Government have concluded that there is need for legislation not only to keep the situation under review but also to see that computer systems in which personal information is held, are operated with appropriate safeguards. A data Committee has been formed pending the setting up of a permanent statutory machinery to help evolve standards which would safeguard personal information against unauthorised use and keep an eye that the computers in fact operate within these parameters. It would not be out of place here to mention the statutory objectives which have been urged by the Expert Committee in the U.K.

- (1) Information should be regarded as held for a specific purpose and not be used, without appropriate authorisation, for other purposes;
- (2) Access to information should be confined to those authorised to have it for the purpose for which it was supplied.
- (3) The amount of information collected and held should be the minimum necessary for the achievement of specified purpose.
- (4) In computerised systems handling information for statistical purposes, adequate provisions should be made in their design and programme for separating identities from the rest of the data.
- (5) There should be arrangements whereby the subject could be told about the information held concerning him.



- (6) The level of security to be achieved by a system should be specified in advance by the user and should include precautions against the deliberate abuse or misuse of information.
- (7) A monitoring system should be provided to facilitate the detection of any violation of the security system.
- (8) In the design of information systems, periods should be specified beyond which the information should not be retained.
- (9) Data held should be accurate. There should be machinery for the correction of inaccuracy and the updating of information.
- (10) Care should be taken in coding value judgments.

5.35. The Committee attach great importance to the data-security aspect involved in computerisation. So long as the leakage of information was possible only through men data security did not pose so very much of a problem. But with sophisticated instruments which can be remotely controlled or with components which can store information several times more than the normal human brain can, the dangers to data-security have become far-reaching and almost frightful. Today, it seems, in most of the Government Departments we generally have what is known as 'batch processing systems'. But in the not very remote future we would be having information systems inter-connected with each other or systems with multiple access. These new facts of technological change are bound to pose peculiarly complex problems of security. The Committee would urge that immediate attention should be given to this problem and Government should make sure of an adequate awareness in all sensitive Departments about the paramount importance of data-security, and also the provision of the essential wherewithal to counter all threats to it.

5.36. The Committee note that there are enough monitoring safeguards to check against unauthorised transmission through the gadgets surreptitiously installed in our computers. But as pointed out in paragraph 5.1 the possibilities of such leakage cannot be completely ruled out. Several other subtle methods by which access to the information can be had have been enumerated in the aforesaid paragraph. The Secretary, Department of Space himself told the Committee that "the overall possibility of the espionage or intelligence gathering without the knowledge of other people is really fantastic in electronics; there is a large electronic-magnetic spectrum from which you can gather this information".

5.37. The Ministry of Defence, and the Department of Space who have also installed computers, informed the Committee that they had taken special steps to screen the persons employed on operating computers. The Committee are not sure whether similar screening is being done by other Departments handling information of a sensitive nature. The Committee feel that such screening is necessary not only in the Departments of Defence and Space but in other key Departments also. Government should take adequate care and issue necessary instructions in this regard. The Committee were informed by many Departments that they had their own personnel for maintenance. But in those cases where the computers had been hired and the maintenance was being done, for example, by IBM, the representative of the Department of Electronics acknowledged the danger of a foreign manufacturers' employee becoming friendly with their personnel of the computer with a special motive and worming his way to the information.

5.38. About IBM, the Secretary, Department of Space, made a pregnant observation: "in the last 5 years or so we have been fairly aware of the difficult position in which the IBM has been able to place the various parts of the world". Alluding to IBM, the representative of the Department of Communications had similarly to say: "regarding any international organisation of this type which is foreign without mentioning anything specific it can be said that we would not be surprised if we come to know that some foreign multinational corporations which are operating in our country adopt certain methods which are not in our national interest". In the light of these observations and in view of the fact that the country continues to largely depend on foreign companies in the computer field the Committee's anxious concern about the security aspect will be appreciated.

5.39. This concern has been accentuated by the fact that there appears to have been no coordinated thinking from the security angle, on the part of the agency of Government dealing with security, namely, the Ministry of Home Affairs. The Home Secretary had simply stated that each Department was supposed to take necessary measures from the security aspect. This is a rather airy observation, least expected from the Home Ministry. The Committee are of the view that the Ministry of Home Affairs should have taken continuous interest all these years in this vital matter and should have been in a position firmly to reassure the Committee that data in our sensitive departments at least were being rigorously and fully safeguarded.

5.40. The Committee note that the Department of Electronics are exercised about the problem of ensuring security of information and are considering actively the setting up of a panel of specialists to advise the Electronics Commission on this issue. The Committee wish this panel of experts to be constituted without delay. The panel of experts may co-opt representatives of the Ministries of Home Affairs, Defence etc., so that all relevant aspects can be taken into account while devising foolproof measures to guard against data falling into unauthorised hands. The Committee would also like to refer in this context to the statement made by the Department of Electronics that it was technologically possible to instal hardware and software keys with the help of local computer engineers on imported systems in order to obviate chances of leakage of data to unauthorised persons. The Committee would like Government to consider whether these technological devices should not be installed straightaway on the imported computer system working in the sensitive Government Departments so that no risks are taken with data-security.

5.41. The Committee would urge that the Department of Electronics should take a lead in encouraging research studies to increase knowledge and understanding of the security of Computer System, more specially the computers which have either been taken on hire from multinationals or which have been imported. The Department of Electronics should have a cell which would provide computer users and indigenous computer manufacturers with information and guidance about security measures.

5.42. The Committee understand that the subject of preserving confidentiality of information, particularly concerning individuals, so that it is not mis-used by unauthorised persons, has been attracting the attention of a number of countries like Germany, France, United Kingdom etc. In U.K. two White Papers on "Computers and Privacy" and "Computers: Safeguards for Privacy" have been brought out during the last two years. The Committee suggest that the developments in U.K. and elsewhere may be studied by the Department of Electronics and perhaps also utilised in whatever ways might be thought appropriate.

**CHAPTER VI**  
**INDIAN OPERATIONS OF IBM|ICL**

**General**

**IBM**

6.1. The International Business Machines Corporation (IBM) has its headquarters in New York. According to the Annual Report (1974) of IBM, this Corporation "Develops, manufactures, markets and services a wide variety in information-handling products. Their uses range over the spectrum of human activity, from science, business and health, to education, the arts and entertainment. Geographically they may be found almost everywhere, from complex urban centres to rural areas. Presently, IBM is said to be operating in 129 countries of the world.

6.2. Operations in India are carried on by IBM on the basis of a branch of a foreign company, for purposes of legal requirements. India operations, in terms of gross income from sales, rentals and services accounted for only one-quarter of one percent of IBM's world operations and half a percent of its foreign operations. In terms of investment, India operations accounted for 0.2 per cent of its capital employed. An investment of 100 dollars in 1974 produced

126 dollars in world operations;  
156 dollars in foreign operations; and  
156 dollars in India operations.

in terms of gross income from sales, rental and services and other income. On share-holders equity (net worth) it produced 36.3 dollars on world operations and 57.4 dollars on India operations in terms of earnings before income taxes. However, in terms of net earnings after taxes, an investment of 100 dollars of shareholders equity produced;

19.4 dollars in world operations;  
29.6 dollars in foreign operations;  
9.5 dollars in India operations.

[Tax provisions for India operations in 1974 amounted to nearly 84 per cent of book profits.]

6.3. IBM as also the other company functioning in this field namely ICL have built up substantial volume of business and most of this consist of trading activities such as importing computer systems, hiring/leasing of imported computers as also computers and data processing machines manufactured or reconditioned locally; providing maintenance and soft-ware support; running of data processing centres. manufacturing of punch cards etc. The manufacturing activities of IBM consisted of reconditioning IBM 1401 computers and other date processing machines as tabulators, sorters, punches verifiers etc. on an 'As Is' basis.

6.4. The various activities of IBM in India which result in operating revenues are listed year-wise in the table below:

S. No.	For the year ended on 31st December					
	1974	1973	1972	1971	1970	1969
1. Machine Rentals.	1257.34	1198.84	1088.53	863.33	702.17	612.35
2. Export Sales	410.61	333.94	93.80	162.78	139.56	149.94
3. Sales-Cards	251.62	162.43	130.42	112.93	95.81	63.39
4. Date Processing Charges	226.90	183.32	160.69	139.55	94.06	60.86
5. Sales-Imported Items	70.32	227.36	110.63	62.41	11.16	64.58
6. Sales-Indigenous Equipments	42.19	33.03	44.74	41.70	22.89	8.87
7. Ribbons, Control Panels, Wires etc.	31.97	22.68	22.87	29.11	19.17	14.83
8. Miscellaneous Sales and Services	64.04	52.93	42.38	59.80	32.71	27.39
<b>TOTAL</b>	<b>2354.99</b>	<b>2214.53</b>	<b>1694.06</b>	<b>1495.61</b>	<b>1117.53</b>	<b>1002.28</b>

It is seen from the above that gross income from machine rentals are the principal sources of revenues of IBM. This is followed by export sales. Data processing charges on customer jobs are also significant amongst service charges. Local sales primarily related to cards. Sales of imported items, indigenous equipment and parts and other miscellaneous supplies accounted for the balance of local sales.

6.5. In regard to machine rentals it has been stated that "thousands of machines having no book value are in circulation earning machine rentals at fixed rates. It is further revealed that while IBM recovers for most of the machines, depreciation based on 4 year life, such machines last for years and years. Another interesting feature of these rental machines is that most of them had already served elsewhere in other developed countries, the best part of their useful lives. When they became obsolete in those countries and therefore scrapped, such machines were being imported in India on the basis of 'AS IS' machines refurbished and circulated, as rental machines earning revenues at fantastic rates. Thus obsolete equipments in developed countries provide a very profitable source of revenues to IBM for use as rental machines in countries like India."

#### *Export Sales*

6.6. IBM exports a major portion of its production of data processing equipments (mostly Punches and Verifiers). The method of pricing these machines for export is:

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Total manufacturing cost . . . . .	xxx
Less: Duty paid on imported parts and components used in production . . . . .	xxx
	xxx
Add: Manufacturing Profit 25% on above . . . . .	xxx
Export price for inter-company billing . . . . .	xxx

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6.7. The manufacturing cost considered in export pricing is only the equipment cost. In export invoices all charges such as freight, insurance, casing and packing, export handling charges etc. are included separately and recovered from the importing country.

6.8. The investments made by IBM in the India plant for the manufacture of data processing equipments are mostly used for exports. These exports are to IBM's related companies. The inter-Company billing price for exports does not cover even the relevant Head Office and New York Costs properly allocable to it. Exports, thus, results in losses to India operations. However, as equipments are sold in the importing countries at uniform international prices, the profits on these machines exported from India are reflected in the respective IBM's organisations in the importing countries.

### *Data Processing for Customers*

6.9. IBM operates Data Centres in four locations in India viz., Bombay Calcutta, Delhi and Madras. Rental machines are installed internally for this purpose. These centres carry out the functions of system analysis, programming and processing of customer jobs on a chargeable basis. Revenues derived from this source are significant and therefore this activity is treated as a distinct one for compiling costs and returns.

### *Sales within India*

6.10. Sales within India comprise of—(i) Cards which account for major portion of these sales; (ii) Imported equipments and (iii) Supply items such as ribbons, control panels, wires etc. Sales of data processing parts have been insignificant.

6.11. The Cost Accounts Branch of the Ministry of Finance who have recently made an analysis of the costs of IBM have pointed out that “the working capital employed in activities relating to machine rentals as well as customer jobs in Data centres is almost negligible.”

6.12. The various items imported by IBM for sale in India are:

1. Systems
2. Features for expansion of installed systems
3. Magnet Tapes
4. Electric Typewriters
5. Printers
6. Data Adapter
7. Plotter
8. Electric Typewriter Parts
9. Disc Packs
10. Disc storage
11. Multiplex control enclosure
12. Verifiers
13. Magnetic Tape Units
14. Disc Cartridges
15. Disc Drives

6.13. The studies made by the Cost Accounts Branch have revealed that the rates charged by IBM provide fantastically high profits in the case of the following items:

- (i) Systems
- (ii) Features for expansion of installed systems.
- (iii) Printers
- (iv) Data Adapter.
- (v) Electric Typewriter parts
- (vi) Disc packs
- (vii) Disc storage.

6.14. The profits earned by IBM as a result of India operations were of the following order:

Year	Profits	
	Before Taxes	After Taxes
(Rs. Lakhs)		
1974	874	142
1973	960	205
1972	742	160
1971	633	166
1970	391	91
1960	339	103

During the above six years profits remitted to New York were:

Date of Remittance	Amount of Remittance
(Rs. lakhs)	
20-12-74	8.98
6-4-72	107.44
15-2-72	98.00
29-12-70	4.98
<b>Total</b>	<b>219.40</b>



6.15. An analysis made by the Inter-Ministerial Working Group to go into the question of Costs of IBM and ICL had revealed that on an overall basis the IBM earned rates of return amounting to 49 per cent, 58 per cent, 59 per cent, 74 per cent and 83 per cent on capital employed respectively for the 5 years—1968 to 1972.

6.16. The Cost Accounts Branch of the Ministry of Finance have worked out the net effect of IBM's operations in India on foreign exchange. Their study reveals that IBM's operations have resulted in a net outflow of foreign exchange of significant amounts as shown in the statement at Appendix VII.

### ICL

6.17. ICL has two companies operating in India. ICL (India) Private Ltd. is a subsidiary of the International Computers, U.K., who own 100 per cent shares of the company. The International Computers Indian Manufacture Ltd. is also a subsidiary of International Computers, U.K. 60 per cent of the equity in ICIM is held by ICL, U.K. and the rest is widely dispersed among the public.

### *International Computers Indian Manufacture Ltd. (ICIM), Bombay*

6.18. This company owns two factories—one at Poona for the manufacture of conventional machines such as punches, verifiers, tabulators etc. and the other at Bangalore where computer systems of 1901. A series and computer enhancements are manufactured in technical collaboration with Bharat Electronics Ltd., Bangalore. The Company pays sub-contract charges to Bharat Electronics for the technical assistance rendered by them for the assembly of computer systems.

6.19. The company manufactures hand punches, hand verifiers and sorters mainly from indigenous materials and the transfer prices to the marketing company in those cases are fixed in terms of rupees after mutual negotiations. For rebuild machines such as tabulators, automatic and P.B. punch, collators etc., which are made from imported "As-is" machines, and for computer systems enhancements, the transfer prices to the Indian Marketing company are based on the list price in £ indicated by the principals in U.K., to which conversion factors ranging from 1 £ = Rs. 8.13 to 1 £ = Rs. 19.25 are applied to arrive at the transfer price in rupees.

6.20. The sale of computer systems, tabulators, sale of parts for computer and conventional machines and computer usage accounted

for the bulk of the sales of the company in 1974-75 and 1973-74. Export sales which consisted mainly of machine parts and cards, amounted to less than 2 per cent of the total sales.

### ICL (India) Private Limited

6.21. This company is a 100 per cent subsidiary of the U.K. company, which looks after the marketing and allied activities in India. It has six branches and about 60 representatives spread all over the country. The Indian Company is stated to be operating independently and no royalties or service charges etc. are payable to the U.K. parent company. It is understood that dividend was first declared in 1973-74 only and the net dividend after tax remitted was Rs. 1.63 lakhs.

6.22. The various activities of ICL (India) which result in operating revenues and their relative proportion as percentage to total income is given in the statement below:

for the year ended 30th Sept.

	1974		1975	
	Amount Rs. in lakhs	% to total Income	Amount Rs. in Lakhs	% to Total Income
1. Rentals, Maintenance etc.	407.26	69.12	491.46	62.25
2. Equipment sales Local	101.56	14.74	72.36	9.15
3. Card Sales	83.66	12.15	125.43	15.88
4. Tapes, Discs etc.	33.15	4.82	14.74	1.87
5. Ribbons, Paper Rolls etc.	9.31	1.35	12.89	1.63
6. Control Panel & Boxes	2.15	0.31	8.02	1.01
7. Spares etc.	1.24	0.18	0.85	0.12
8. Service Bureau Income	14.29	2.07	15.44	1.96
9. Computer Times Sales	26.37	3.82	34.06	4.31
10. Misc. Income :—Agency fee, tuition, manuals, scrap etc.	9.96	1.44	14.24	1.81
Total	688.95	10.00	789.49	100.00

6.23. It is seen from the above gross income from machine rentals and maintenance charges on sold machines form the principal sources of revenue. This is followed by outright sale of equipments

and cards. Income from Service Bureau and+Computer Times Sales form about 6 per cent of total income. The balance income is contributed by sale of Tapes, Discs, Control Panels, Ribbons etc. and Misc. income.

6.24. The sales include all types of equipment which are also hired out, cards manufactured in card work and Discs, ribbons, panels etc.

6.25. The company renders service to customers for which a Service Bureau with staff and machines has been set up. In addition computer time is purchased and sold to needy customers.

6.26. Misc. revenues are contributed by Tution, Manuals, Agency fee.

6.27. The analysis made by the Inter-Ministerial Working Group to go into the question of costs of IBM and ICL has revealed that the rates of returns earned by ICL (India) Pvt. Ltd. were 33 per cent, 23 per cent, 25 per cent, 38 per cent and 54 per cent respectively for the 5 years—1968 to 1972.

6.28. The net effect of ICL's operation in India on foreign exchange, as worked out by the Cost Accounts Branch of the Ministry of Finance is indicated in the statement at Appendix VIII.

#### *Manufacturing Programme of IBM and ICL*

6.29. The Committee desired to know what was the Government policy in regard to functioning of foreign equity firms such as IBM and ICL who are engaged in business activities connected with computers and data processing equipment. In a note, the Deptt. of Electronics have stated:

“The dominant role which these companies had in the computer sector of our electronics industry and the crucial importance of this sector for self-reliance in electronics, led the Electronics Commission to undertake a comprehensive review of the operations of these companies as far back as 1971. As a result of that review, the Commission came to the conclusion that as foreign controlled companies, the activities of IBM and ICL should be so reoriented; that they are concentrated either in heavily export-oriented production programme of both hardware and soft-ware, and/or in domestic manufacturing activities involving production on the basis of advanced technology

of fully contemporary computer equipment which fulfills genuine national needs.

The Commission, therefore, decided in late 1971, that IBM's 'AS IS' programmes should be phased out completely. The Department of Electronics has taken the necessary executive measures to implement this policy, with the result that no reconditioned IBM 1401 computers have been marketed after 1972. The Department took similar measures in regard to the Unit Record Machines of IBM. As a result, within barely a year of this policy coming into force, the company undertook a crash indigenisation programme, involving genuine manufacture of parts through sub-contractors. This has resulted in Unit Record Machines with extremely little import content being manufactured from this year. However, in pursuance of the policy decision of the Commission indicated above, the Department of Electronics has also taken a promotional approach.

It has asked both companies to make proposals for genuine indigenous manufacturing programmes for contemporary computer systems and computer peripherals as also heavily export-oriented programmes. In response, IBM has made some proposals. However, the Electronics Commission has felt that except for the 100 per cent export programme of IBM relating to the 129 key-punch, the other elements of these proposals do not result in movement of the IBM activity in India, in the desired direction *viz.*, away from trading and towards genuine local manufacture of contemporary products. For its part, ICL has also made a proposal for manufacture of improved version of computers and also peripherals to meet the requirements of other indigenous CPU manufactures.

It was about the time when the Department had come to these conclusions regarding the programmes of the two companies that the Foreign Exchange Regulations Act, 1973 was passed by Parliament. The Act, which came into force from January 1, 1974, required that the trading activities of foreign equity companies be severely restricted. Therefore, based upon the guidelines for implementing the relevant sections of the Act announced by Government in late December, 1973, the Department of Electronics has further reviewed the activities of IBM and ICL. This review has

resulted in the Department of Electronics recommending to the FERA Committee set up by Government to implement the Act, that both IBM and ICL should terminate their trading and service activities within the next two years and that their maintenance activities should be progressively handed over by them to the Computer Maintenance Corporation, set up by the Department of Electronics. As IBM wished to continue to operate on the basis of 100 per cent foreign equity i.e., without any dilution, the Government has decided on the recommendations of the Department of Electronics and in accordance with the Guidelines, that all future manufacturing operations of IBM here should be undertaken on the basis of 100 per cent export. As regards ICL the transfer of maintenance activities to the Computer Maintenance Corporation and the phasing out of trading and service bureau activities of ICL and concentrating all production in the ICUM have been recommended."

6.30. The Committee asked whether there was any proposal for allowing multi-nationals like IBM to continue their activities by setting up 100 per cent export industries in the so-called free trade zones where neither the Indian Municipal Laws nor Indian Labour Laws will apply. A representative of the Department of Economic Affairs deposed:

"I presume that whatever rules are applicable to free trade zones for everybody would be applicable to multi-nationals also. If they propose to set up a unit in Santa Cruz or Kandla on a 100 per cent export basis, perhaps the same rules and facilities applicable to others will also be applicable to them."

6.31. A representative of the Department of Electronics stated in this context:

"In regard to the Santa Cruz export processing zone, there is no objection to 100 per cent foreign companies setting up operations on a 100 per cent export basis. But IBM are not one of the applicants now."

He added:

"Setting up of export processing zones, an area where operators will indulge in 100 per cent export activities, has its economic advantages of utilising the skills available in the country and has also certain technological gains to the country. Only on such basis it is done."

6.32. On being pointed out that the continuation of IBM operations, if permitted to be conducted would be even more profitable to the company in the projected free trade zones, the Secretary, Department of Expenditure stated:

“It has already been stated that we have not at present any application from IBM for setting up a units in the electronics export processing zone at Santa Cruz. It has also been stated that in principle the project does not exclude either multi-nationals or 100 per cent-owned subsidiaries of multi-nationals. The reasons for this exception to the general policy of Government not to encourage such units is that in specific cases it may be that the export earnings which would be so developed could not otherwise be developed within the country. But there are tests and safeguards to make sure that this does not become a kind of alibi for shifting units which would not be allowed elsewhere in the country to take shelter in such export zones. The two main safeguards are: firstly, that the value added in manufacture within the country must be very substantial. This has certainly to be more than 50 per cent of the value of the export and usually it is substantially more. secondly, the export is to be of a type which could not be economically developed from the existing base of an India-based company; thirdly, besides these two general principles Government are, I think, fully conscious of the problem of transfer pricing in multi-national firms. The fact that if IBM or any other such organisation sets up a manufacture and sells from one branch of its company to another branch of the same company we are at a disadvantage in checking the prices at which these goods cross national frontiers, is a well-known problem and in judging any future proposal of this kind, I am sure Government would bear this in mind, whether it is from IBM or any other multi-national.”

He added:

“Eligibility to operate from free trade zone is not necessarily equal to being permitted to so operate. Each individual case of investment in free trade zone is examined on the basis of certain criteria. In theory it is true that in the event of IBM satisfying these criteria, it would be open to Government to permit it to operate from there. At that time, in the event of a hypothetical application from IBM being successful in passing the criteria of Government for such investment, if there were extra economic

considerations which have to be borne in mind, I feel sure Government would do so."

6.33. The Committee then drew attention to the following note submitted to them by the Department of Electronics:

"Negotiations have been held with these two companies for several years and particularly since the formation of the Electronics Commission in 1971 to modify the operations and programmes of these two companies in keeping with the policies of the Government. IBM are a 100 per cent branch of IBM World Trade Corporation and have reiterated their world wide policy of operating only on the basis of 100 per cent foreign equity. IBM have consequently been permitted manufacturing activities based on 100 per cent export; they make 129 key-punches for such 100 per cent export. ICL have agreed to dilution of their foreign equity after merger of the ICL 100 per cent foreign equity) and ICIM (60 per cent foreign equity) companies, based on a manufacturing programme that they have submitted. Proposals from these two companies with regard to their programmes during the 5th and 6th Plan period are currently under consideration. The re-structuring of their manufacturing programmes to meet part of the requirements of peripherals for the indigenous programme on the one hand and the national need for computers systems of large size on the other is under consideration. Certain proposals with regard to the setting up of a jointly programme by Burroughs of USA and Tata Consultancy services in India are currently under consideration; these are configured essentially as an export-oriented activity."

6.34. On being asked whether in the name of export promotion we are pursuing policies which would mean the continuation of the grip of companies like IBM as also the imposition of a possible combination of monopoly groups like Tata Consultancy Service and the Burroughs of USA, the Secretary, Department of Expenditure replied:

"Two points have been made by you. One is that the operation of companies like the IBM or the expansion of their activities will result in some degree of loss of independence to the Indian economy or Indian policy. You said that the combination—I do not know whether Burroughs and Tatas have put up any unit in export processing zone—

would constitute an extension of multinational empire in India. As against that, I should submit that 100 per cent export oriented unit located within the confines of export processing zone and for specifically making things for the foreign market cannot and should not be considered as resulting in any grip on the Indian economy, apart from their earning being counted as earnings of the Indian foreign exchange budget. There is no measure of control exercised on the Indian economy as such by the operation of such a body. \*\*\*\* \*\*\*\*\* While it is true that IBM high pressure salesmanship had a great deal to do with worldwide success, we cannot escape the fact that IBM equipment is often in advance of other equipment available in the market and that in research and development IBM had been world leaders in the computer industry so long as we require certain types of sophisticated equipment, we have to face the fact that this equipment is sometimes, not always, the best available from this organisation."

#### **Dilution of Foreign Equity of IBM and ICL**

6.35. Under Section 29(2)(a) of the Foreign Exchange Regulation Act, 1973 foreign companies working in India through their branches and Indian companies in which the non-resident interest is more than 40 per cent (all of which can be termed as multinationals) have to obtain Reserve Bank of India's approval for continuing their activities. Thus they were to make such applications to the R.B.I. upto 30th June, 1974 for this purpose. This period was subsequently extended by R.B.I. upto 31st August 1974.

6.36. The Committee were informed that the IBM, International Computers (India) Private Ltd. (ICL) and International Computer Indian Manufacture Ltd. (I.C.I.M.) have sought Reserve Bank's permission under Section 29 of the FERA, 1973 for continuing their existing manufacturing and other business activities in India. As to the decision taken by the Reserve Bank on the applications of these companies, it has been stated:

"It has been decided to allow IBM to continue its activities subject, *inter-alia* to the condition that its Indian branch would be converted, within a period of two years, into an Indian company with a non-resident interest not exceeding 40 per cent. (The letter issued by RBI to IBM is reproduced in Appendix IX).

A decision has been taken to permit International Computer (India) Pvt. Ltd., also to continue its activities on the



condition, *inter alia* that the non-resident interest in its equity capital would be reduced to 40 per cent within a period of two years.

No decision on the application made by International Computers Indian Manufacture Ltd., under Section 29 of the FERA, 1973 has been conveyed to the company so far."

6.37. During evidence the Committee enquired why two years' time had been allowed to IBM for reducing their equity to 40 per cent. The Deputy Governor of the R.B.I. stated:

"We have issued them a letter saying that they must reduce it within two years. Law allows them a specific period and the high-powered committee in the Ministry of Finance came to the conclusion that they should be given two years to do that."

It may be mentioned in this connection that a high power committee presided by Secretary, Department of Economic Affairs (known as the FERA Committee) has been constituted to which all cases other than those dealt with by R.B.I. under Section 29 of the Foreign Exchange Regulation Act are referred for consideration.

6.38. Referring to certain press reports, the Committee enquired whether the Government had under contemplation the question of diluting the Foreign Exchange Regulations Act with a view to accommodate the claims of giant multinationals like IBM. A representative of the Department of Economic Affairs stated:

"I am afraid that on this, as far as, I am aware, there is no such intention of diluting either the Foreign Exchange Regulations Act or the guidelines under it."

6.39. In a note subsequently furnished to the Committee the Department of Electronics have stated:

"The Government have asked IBM, in terms of FERA, either to reduce their equity or to reduce their operations which do not involve inflow of high technology into the country or 100 per cent export. IBM have informed the Government that they are not willing to reduce their equity in India and negotiations are going on between the Government and IBM to phase out operations of IBM which are not of high technology or for purpose of 100 per cent export."

**6.40.** On being asked about the reported insistence of IBM not to dilute its equity, the Secretary, Department of Expenditure replied:

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“The second point related to the IBM’s insistence that they are not in a position to dilute their equity. This is, I think, being considered by the authorities. At some stage, I presume, they would have to decide whether they should make an exception or insist on IBM winding up their activities in this country. There would be certain economic costs in the event of that decision being taken, meaning that there would be some loss in exports, but more important there would be some items of equipment which they are currently manufacturing for the Indian market but for which we may have to find alternative sources.”

**6.41.** A representative of the Department of Electronics stated during evidence:

“While IBM has reiterated that they will not be amenable to dilute their equity and that they will operate only with 100 per cent equity, ICL in all their discussions have indicated that they will be prepared to dilute the equity as per our terms here and go with the policies of the Government.”

**6.42.** In reply to a question as to what would be the position if the IBM refused to dilute their equity, the witness stated:

“As things stand today, IBM have been advised under the Foreign Exchange Regulations Act and they have to indicate their response to what has been conveyed to them within a month from now and within three months they have got to submit their revised proposals in keeping with the directions under the Foreign Exchange Regulations Act. What we visualise in the Department of Electronics is that if they do not want to fall in line with the requirements of the Foreign Exchange Regulations Act, we really have to draw up a phased programme for phasing out all IBM operations which will not be permitted in the country. This would essentially cover a range of responsibilities which they are now

meeting in this country in providing data-processing machines. With regard to the computers which have been purchased by users, one does not anticipate any difficulty with regard to taking over maintenance immediately and delinking IBM from their responsibilities to these bought out systems. It will only be necessary to ensure that IBM continues to provide spares on a guaranteed basis for maintenance of the systems which under their norms of ethical rules of business they are bound to do. We do not expect that they would create any difficulty on this account.

With regard to other systems which are on hire by IBM to various users in the country, there are certain problems, because most of the hiring agreements do not have an option for a purchase by these users at any point of time. With regard to the Railways there was just an odd instance of one transaction where there was purchase option provided by that IBM. With regard to the other 13 installations out of 14, there was no option for purchase stipulated. We have carried out some studies of similar arrangements offered by other companies the world over where generally there is a practice that even if systems are given out on hire, there is the option to the user to go over for a purchase over a period of time. We have now to sit with IBM and on the basis of study carried with by the Inter-Ministerial Committees, we should be able to determine what would be a fair price for most of the systems at which they should be offered to the respective users and we will take them over on the basis of satisfactory arrangements."

He added:

"We are in a situation to-day where one is concerned with 150 and odd installations using various types of computers and the responsibilities for supporting these installations and allowing them to continue their very important functions have got to be smoothly taken over. Most of the machines supplied by IBM are obsolete and very soon hopeful these will have to be replaced by our own indigenous computers from the Electronics Corporation, like TDC-316 which are now being introduced into usage. We also have to take over the maintenance responsibility of other systems. All this will require

phasing out in a period of two years. Within the next three months, IBM will sit down with the Department of Electronics and revise their programme under the stipulation of FERA and that will be the time when we shall draw up a phased programme which will essentially confirm that the significant responsibilities fulfilled by IBM to users will be taken over by other agencies in the country."

6.43. The Committee enquired whether it has been the view of the Electronics Commission that if IBM was not prepared to fall in line with the law of the land, they should be asked to wind up their business in this country. In this connection a representative of the Department of Electronics stated:

"Going back to 1971 when the Electronics Commission first came in, one of the first areas the Commission has been concerned with has been the area of computers and particularly the role of IBM and ICL and the apparently monopolistic hold that IBM had in the computer area in the country. IBM had proposals at that time (1971) to change over from IBM 1401 computers to essentially a AS IS programme with regard to 360 computers which were being phased out in the Western countries. The Electronics Commission did not accept this as a significant steps towards building up of indigenous high level technology in the country.

The Electronics Commission also was not very happy that IBM had not made use of our skills, with regard to software developments in which area we believe we have skills in abundance. IBM did not also propose any significant investments in India with regard to Research and Development on computers hardware and software. So, the proposals as outlined by IBM was not acceptable to the Electronics Commission and we have always been insisting that IBM may come out with proposals which really bring in substantial earnings in terms of foreign exchange at the same time ensuring that there would be significant sub-contracting to various units within the country to participate in the export oriented programmes. IBM have been dragging along in coming up with significant proposals and lately during 1974 they did come up with certain proposals which essentially had very many elements in it some of which could be acceptable and

some of which could not be acceptable but as a package, the proposals were not found acceptable. So, it is our view that in case IBM does decide that they would not really fall in line with the policies of Government of India and if they decide to leave the country, we should not be in any difficulty at all. This apart the technological options that we see for this country—the manner in which computer industry should develop in this country are decidedly not in line with the technology policies of IBM.”

6.44. A representative of the Electronics Commission stated in this context:

“It was thought that it was high time we looked into the appropriate technology in the country and we did arrive at an appropriate conclusion. We have come to the conclusion that IBM’s system is incompatible with the requirements existing in the country.”

6.45. The Committee asked whether the Department of Electronics had, in its evaluation of the role of IBM and ICL in the development of computer technology in India made some formulations for breaking the hold of these multinationals who have been making huge profits out of their activities in India. The Secretary, Department of Electronics stated during evidence:

“You know that we have the Foreign Exchange Regulations Act (FERA). Under that Act neither of these two companies—IBM and ICL—can operate as they have done so far; because under FERA, one considers essentially all categories of operations of foreign firms with high foreign equity, namely, their high technology—operations and export based operations and the percentage of these as a function of their total activity. In the case of both these firms, our view has been that the percentage of these has been rather small namely the export plus sophisticated technology operations have been small as compared to their total activity, both of them have been given clear notices that they cannot operate any longer on the current pattern. Either they will have to change the company’s equity structure to make the foreign equity essentially below 40 per cent or they will have to, if they wish, make new proposals; whether they would mind up their “soft” activities and restrict themselves only to

**export plus high technology programmes. So, under FERA, it has been possible now to take action which will limit the functioning of these companies compared to the past.**

**As regards your second point about the manpower and the value of the operation of these firms, I would say that a large part of the operation of these firms relates to service operations connected with the computers which they have leased and hired or sold. What I would regard as important for the country is this. We could have done this (maintenance etc.) in any case independently.**

**The only point where I would say that they have played some role which is still relatively minor, in my view, as compared to the magnitude of these companies and their operations is the production of some elements at the factory of ICL at Poona which makes peripheral equipment which is quite good. The man-power there in that factory and the products they make and the engineering skills are really worthwhile. Similarly, IBM have also been able to do that in their factory in Bombay in Maharashtra which is a good factory in the sense that they have there some of their sophisticated technology and engineering skills and so on. This applies particularly to the production of their export items, the punches 029 or 129 punches. Their export items are of high quality. Therefore, there is a certain amount of engineering skill in the factory itself and in the ancillaries where they have essentially developed these skills.**

**The third point is this. IBM in particular have contributed to our exports in small way. The reason why I regard this as small is this that this is such a big company that if it really wished to do so, it could have done enormously more. This has been, in my view, just a carrot, or if you wish to say, a very limited contribution, which they have made to justify everything else that they have been doing here."**

**6.46. When the Committee pointed out that presumably no softening in action in so far as these multinationals are concerned was under consideration, the witness stated:**

**"There would be no softening whatsoever at all. FERA has provided us with the basic mechanism to implement what**

we had always been advocating. We required some sort of legal method to implement the policies we had evolved. That now exists in the form of this Act of Parliament."

6.47. The Committee's attention has been drawn to the statement made in Parliament on the 14th April, 1976 which seeks to amplify and clarify the guidelines laid down by Government for the administration of Section 29 of the Foreign Exchange Regulation Act, 1973. Under the existing guidelines no distinction was made between companies substantially engaged in priority or export-oriented sectors and other companies engaged in purely trading activities or manufacturing activities in non-priority areas, since all such companies were required to reduce their foreign share holdings to 40 per cent. In order "to give due weightage to activities which are in the interest of country's economic development and which form a substantial part of the total output, it was felt that an intermediate resting point might be allowed in such cases." It has accordingly been decided that foreign companies whose activities in priority and export-oriented sectors and in sophisticated technology account for not less than 60 per cent of their annual total turn over will be allowed to have upto 51 per cent of their equity holdings. A condition will also be stipulated that the company concerned should undertake to export a minimum of 10 per cent of its total annual turn over within a period of two years commencing from the date of approval by the Reserve Bank of India. Similarly, companies with exports exceeding 40 per cent of their total turnover will now be required to associate Indian participation to not less than 49 per cent of the equity of the company. Cases of companies coming up with proposals of substantial exports would be considered on merits, for higher level of equity participation.

#### *Import of 'AS IS' Machines and Foreign Exchange Implications*

6.48. Explaining the procedure followed by IBM and ICL for bringing in 'AS IS' machines into India and using them for their manufacturing programme, a representative of the Department of Electronics stated in evidence:—

"With regard to the computers and unit record machines, that is, the machines which handle the punch cards, as a medium for processing, accounting machines, tabulators, sorters, punches and so on, have been manufactured by IBM in India under their manufacturing licence. These

have all been manufactured on an "AS IS" programme. Under that programme, IBM and ICL would lift up used machines, from abroad more by weight which will come as a 'hulk'—even the machines—into this country. They are totally stripped. It is not a question of these machines being kept but only their defective parts are replaced. The machines are totally stripped and they go through the parts inspection assembly programme, and their final inspection as though these have been manufactured by using new components. By doing that, the IBM and the ICL companies claim that the end-products go through the same inspection rigours as a normal manufactured product goes through and its life expectancy could be as good as any new machine. This is the philosophy in which they do this 'AS IS' manufacture. What is perhaps about Rs. 10 worth of a hulk might become to be Rs. 100 worth of equipment to the users of most of the machines that have been used or are under use in India. What is of the Committee's concern is the machines in the Government Departments in India that have come by way of hulk'. There have been most of these machines that have been rented out, which are property of the IBM and these have been depreciated on this basis. We have been discussing about this aspect earlier, and you also have a record certain number of machines that have gone through their total depreciation in value and some of which have a small value at a particular point of time. These 'AS IS' machines have been produced even prior to the setting up of the Electronics Commission. The Electronics Commission came into being in 1972. They also had gone into this aspect of As Is machines and decided that such machines could have been brought in only if they could bring in any economy to the end-users, and that might have been one good reason for which one went in for this sort of 'As IS' programme. Such economy to the end-users has not actually worked out in practice. With regard to the machines on rentals for a continuous period, a scheme as to what would be the element of cost of the machines if they were used over a period of time as compared to those used as 'AS IS' machines is to be worked out."

We decided to phase out the As-Is programme and, in 1972, we averaged out the previous three years' consumption in the country and set a level at half of that for 1973,



and we further reduced that in 1974. The licences that are currently given in 1975 are for one-fourth levels for those that were being used around 1971, in the country. But, all these items are to be totally manufactured here and there would not be any import of As-Is machines any longer. This is the current position with regard to the whole area of unit record systems. The punch card systems are obsolete elsewhere, and are also in obsolescence in India too. Export of the punch cards machines have also gone down in the last few years and we are hoping to provide mini-computers in place of the unit record machines about which the Secretary, Electronics Commission had just now spoken. The mini-computers are much more economical and provide much more efficient processing capabilities. The unit record machines as such are obsolete and we should see that we phase out this programme in the next three to four years' time, in this country. There would still be the requirements of punch cards for some users for some of the machines which are there and there are some agencies who just want to keep the data for their statistical purposes and so on these cards. The requirements which were currently at 25 per cent level of 1970-71 may ultimately level out around 10 per cent to 12 per cent."

6.49. Since the As Is machines were brought to India as capital goods, the Committee desired to know whether on such capital goods movement any foreign exchange was involved. To this the representative of the Department of Electronics replied:—

"There was no foreign exchange involvement on them as capital goods. The IBM had certain entitlements out of their export earnings. They were able to export back some of their re-conditioned machines, some and mostly card punches and so on. And out of their export earnings, they had certain entitlements against which there was a foreign exchange out-flow for their 'As Is' machines, that are brought as hulk and components and materials required for manufacturing."

6.50. The Secretary, Electronics Commission stated in response to a question:—

"Earlier operations of IBM were taken as 'boot strapping process in which a relatively small scale export programme is undertaken. The import entitlements against that

export programme are used for bringing in of equipment of 1401 computers and unit record machines. Before the Department of Electronics was formed and started comprehensive look at the activities of IBM Government agreed to a framework in which 85 per cent of the earnings were essentially earnings out of export activities. The Department of Electronics has taken the position that this inter-linkage between the two things should be broken. I might mention in the multi-element proposals that IBM made in early 1974 one of the components which they still reiterated was the preservation of 85 percent entitlement. We are clearly of the view if there is to be any meaningful role of the operations of IBM in regard to 100 per cent export programme it has to be as in the case of other export promotions where no such preferential account is built up. Foreign exchange earnings come in the country and became part of the reserves and import operations are undertaken based on the kind of product to be imported, their prices and implications for the local programme."

6.51. The representative of the Department of Economic Affairs further clarified as under:—

"There is a regular export programme of IBM to other countries. From their exports whatever earnings they have 85 per cent of that they are allowed to have imports. With that they bring in 'As Is' equipment and other things, also. Part of that equipment which they bring is used for further making machines for export but quite a lot of it they use for hiring. That is how they bring the equipment within the country."

6.52. When the Committee pointed out that there appeared to be no check to ensure that the import entitlements of IBM were commensurate with their export performance, the representative of the Department of Economic Affairs stated:

"I do not think that would be correct presentation. Perhaps what is being suggested is their import licence should have been in two parts—one is that goes in export machines and one for the normal use within the country. That is not the procedure which has been followed. They have been allowed to bring in goods equivalent to their 85 per cent export earnings."

He added:

"If there is a feeling that they can bring in anything they like in 85 per cent, it is not correct. They can bring in only items which are permissible according to the import trade control regulations."

6.53. The Committee were informed by Audit that IBM imported into India machines, etc. made only in IBM concerns abroad and similarly it exported from India its assembled or the so called manufactured products to its branches/agencies abroad. In reply, to a question whether IBM made any exports to any other agency except its own branches, a representative of the Department of Electronics stated:

"It is mostly to IBM. It is inter-company transfer. There might have been an odd instance where they might have sold to some other neighbouring countries like Nepal."

6.54. When it was pointed out that just as the prices of imports were being doctored by IBM as was evident from the fact that customs had to increase the loading from 75 per cent to 350 per cent on their declared prices, the prices of exports from India might also be similarly doctored to suit their own interest, the witness stated:

"We quite agree with this surmise. This has been the view of the Electronics Commission and it is on this basis we insist that, in future licensing, for example, in the case of 129 Punches which IBM wanted to bring in under this programme, it was specifically cleared as a cent percent export programme and there will not be any specific entitlements arising out of this export programme."

6.55. The Committee pointed out that in the case of inter-company transfers, the blanket permission for allowing certain percentage of export value as import entitlements calls for a revision to ensure that there was no undue outflow of foreign exchange, the representative of the Department of Electronics stated:

"It is very true and we are aware of the position especially in view of the latest report of the Inter-Ministerial Committee. We are very conscious of this position."

#### *Valuation of Imports*

6.56. Paragraph 43 of the Report of the C&AG for the year 1971-72, Union Government (Railways) relating to procurement by Railways

of Disc Packs for computers at high rates had *inter alia* brought out that the difference between the prices shown in the Customs documents by IBM and those claimed by them from the Railway Administration amounted to Rs. 1.25 lakhs. When this discrepancy was brought to the notice of the firm in May, 1969 for a possible refund, the firm had informed that the amounts shown in the Bill of Entry, being inter-company prices between the branches of the firm, had no bearing on the sale price, which was in conformity with agreement, as certified by their External Auditors and their "Sales Manual".

6.57. The Committee called for information about the purchase prices paid by Government Departments on items imported by IBM/ICL and the actual value of these items declared to Customs at the time of importation by the suppliers. The Committee also enquired whether, in the case of imports by the suppliers, the value adopted for the purpose of levy of Customs Duty was different from that given in the Bills of Entry. In a note, the Central Board of Excise and Customs have stated:

"In many cases it has been found that the purchases were made from IBM who had imported these machines from their principals and associates abroad. From 1st May, 1962 till 25th August, 1973 imports made by the I.B.M. were being assessed to duty on the basis of Inter-Company Billing Prices plus 71 per cent plus actuals of freight, insurance and other charges. However, the actual values declared to the Customs at the time of importation of such machinery will not be readily available with the Departments concerned, since these machines were originally imported by the suppliers i.e., I.B.M. from their principals abroad and the date of their actual importation etc. is not known to these Departments. Even if at this stage, the I.B.M. are requested to indicate the actual value of these machines, it is very likely that they may not furnish the correct amount since they have vested interest in not furnishing the correct figures. Customs departments also cannot ascertain these values in the absence of the relevant I.C.M. Index No. and Cash No. of the Bill of entry under which these have been allowed clearance, which may be available only with the importers. Moreover, collection of this information at this stage from the importers may meet with the following difficulties:

- (i) The complete data of article/model No. will have to be given to IBM to get the information about imports;

- (ii) The goods might have been supplied by M/s. I.B.M. from stock imported earlier and it will be difficult to locate the papers even in their office;
- (iii) M/s. I.B.M. may not cooperate to give this information.
- (iv) The labour involved may not be commensurate with the results.

It may be pertinent to mention here that the I.B.M. having relationship with their foreign associates were in a better position to import such machines by under-invoicing them and charging high margin of profits by selling those machines in India and this problem has been catching the attention of the Customs Department since 1972 and with a view to put an end to this malpractice of I.B.M., their method of invoicing has been completely reviewed. As a result of the review completed by the Bombay Customs House, Special Valuation Branch, the value of the goods imported by M/s. I.B.M. India, will be determined w.e.f: 25th August, 1973 after loading the invoice Inter Company Billing Price by 350 for assessment purposes under Rule 8 of the Customs Valuation Rules, 1963. The value of the imports of spares etc. will also be determined in the similar manner. In all these cases, the actual charges like freight, insurance and other expenses as given in the invoices will be added to the value as determined under section 14(1)(a) of the Customs Act, 1962 or under rule 3(b), (d) and 8 of Customs Valuation Rules, 1963 for assessment purposes.

It will be therefore appreciated that the malady has been remedied to some extent at the time of imports by a substantial loading of values."

6.58. From 1st May, 1962 till 25th August, 1973 imports made by IBM were being assessed to Customs duty on the basis of Inter Company Billing Prices plus 73 per cent plus actuals of freight, insurance and other charges. From 25th August, 1973, a new valuation under which the value of goods imported by IBM would be determined after loading the Inter-Company Billing Prices by 350 per cent was adopted. Explaining the rationale for loading the Inter-Company Billing Prices first by 73 per cent and subsequently by 350 per cent the Chairman, Central Board of Excise and Customs deposited during evidence:

"Now for this I must give some background. The loading of invoice price by 73 per cent came into existence as a re-

sult of an appellate order which was passed by the Central Board of Excise and Customs at that stage. When the Central Board of Excise and Customs started dealing in this subject, they came to the conclusion that the so-called inter-company billing price did not represent the price to an independent importer. So, they said that the cost structure all over the World was working out more. They found that in many cases there was an addition of 30 per cent to the prime cost. In the case of India, at that stage, in 1962, what they found was that there was only an addition of 10 per cent and later on it was made into 20 per cent. So, the first thing the Central Board of Excise and Customs came to the conclusion was that there should be a basic addition of 30 per cent. This would have roughly come to a loading of the invoice value by about 8 per cent. Based on the total value of remittances by the Company to their foreign principals towards profits, a further loading of 65 per cent was fixed. So, it works out to 73 per cent, that is 65 per cent plus 8 per cent equal to 73 per cent."

6.59. In regard to the new valuation adopted with effect from 25th August, 1973, the witness stated:

"25th August, 1973 was not the date when this was promulgated. 25th August, 1973 was the date when they decided to resort to provisional assessment because the review goes on periodically. They started a year earlier. And they also found that the IBM is taking time in replying to various queries and in this regard IBM was also contacting various parts of the world. So, they decided on 25th August, 1973 that they should resort to apply the duty provisionally. But this was only provisional. After a subsequent review, if the department come to the conclusion that a higher price should be charged it would apply from 25th August, 1973. Later on in December 1974, they finally made up their mind.

I might clarify that so far as data processing machines are concerned, they would be based on the domestic sale price in the country of export. Suppose we import a machine from Italy. Whatever is the domestic price in Italy, at which that machine is being sold to the consumers there, from that price 25 per cent was let off by way of subsequent charges for softwares and cost, insurance and freight

was added to that.

But simultaneously they did another exercise. Having regard to the imports made from various countries, what is the percentage by which the inter-company billing price should be loaded? This exercise arose primarily from the fact that IBM also started importing capital equipment for manufacturing these machines here. They found out that the average roughly came to 35 per cent and they said, so far as capital equipment is concerned, the inter-company billing price will be loaded by 35 per cent. This 350 per cent refers to capital equipment imported by IBM.

For data processing machines, it was to be based on the domestic selling price in the country of export, from which the goods were imported."

6.60. In reply to a question it was clarified that the invoice value of accessories and spares was loaded on the same basis as for the main machinery.

6.61. The Committee asked whether it was not a fact that the loading was done on the understanding that the importer was not disclosing the real value of the imported goods. To this, the Chairman, Central Board of Excise and Customs replied:

"That is one way of putting it. When it appears to the Customs that the price quoted in the invoice does not appear to represent the price at which an independent buyer could get it, we make an enquiry."

He added:

"There is certainly a suspicion. The exporting party is IBM, London and the receiving party is IBM, India. They are related people. So, the price quoted in the invoice need not necessarily represent the price at which a third party can import it. Under the Customs Act, you are required to determine the price at which it will be available to an independent importer."

6.62. On being pointed out that the increase in loading from 73 per cent to 350 per cent would suggest that the firm was indulging in under invoicing, the witness stated:

"This decision was taken on 17th December, 1974 by an Assistant Collector of the Bombay Custom House; it is not as

though Government took it.....I will try to put it in the proper perspective. For these types of machines, the usual method of disposal is one of renting out. They are not imported for outright sale. Another feature is that one branch abroad sends its goods to its subsidiary or to the other branch in India. We have to see whether there is any method by which an independent price determination can be done. In an appeal that was filed with the Central Board, it was held that it should be the Inter-company billing price plus 73 per cent, according to the data which was available in this country, at that stage. Later on it was felt that some sort of a direct sale has taken place in various countries. A valuation review was undertaken by the Bombay Custom House in regard to IBM during 1972-73. When replies from the firm did not come quickly, the Custom House ordered on 25th August, 1973 that henceforth assessment for this company would be provisional. Whatever the existing price was, the company billing price plus 73 per cent and the 20 per cent extra, were there. Later on, the final enquiry disclosed that the loading has to be higher. Nonetheless, it was decided that it would be effective from 25th August, 1973. In the meantime they went to the court. The Custom House completed the enquiry and issued a final circular, fixing the loading, so far as the capital equipment which they imported for setting up some machinery to be used for local production. The figure 375 per cent was corrected in practice and put at 350 per cent. In regard to the data processing equipment which was imported, they said that it was possible then for the Custom House to come to the conclusion that independent selling prices in the country of export, i.e. domestic selling prices, are available; and in our valuation rules, one of the provisions authorises the Customs authorities to so base their valuation, for Customs purposes. So, this Assistant Collector came to the conclusion that it will be in order, if the assessable price in respect of IBM was fixed on the basis of domestic selling price in the country of export, less 25 per cent of course, adding insurance and freight in the ordinary course. Immediately, this party went to the court; and as a result of the court proceedings, a consent order was there, whereby it was agreed that for the time being, pending the disposal of the appeal before the Appellate Collector, they shall continue to be assessed on the exist-



ing basis, on the condition that if the decision went against them, they would pay the difference retrospectively. Right now, the appeal is pending before the Appellate Collector, in which IBM have questioned the very basis of this approach."

6.63. The Committee desired to know whether the Custom Department had enough evidence based on which the loading was increased from 73 per cent to 350 per cent. The Chairman, Central Board of Excise and Customs stated:

"As I have told you, it was 8 per cent to which the remaining 65 per cent was added; it was done on the basis of profits which they were remitting to that country. It represents what should have been the actual cost. So, it was based on it. No other material was available. It is always preferable, from the Customs' point of view, . . . . . if an out-right purchase price is available—to base the price on it. At that time, it was not available. No independent import was taking place. In 1964, this was based on the quantum of profits that these people were remitting abroad. Giving various deductions from it, the Board felt that 65 per cent plus 8 per cent would be fair enough. Then, a further view gained ground that there were domestic sales abroad through some independent source. They found that the Customs law and the rules framed thereunder permitted them to deduce the assessable value from it. As such, the assessable value was derived from the domestic sale price of the country of export. They have gone in appeal which is pending."

6.64. Referring to the statement made by the Chairman, Central Board of Excise and Customs to the effect that one of the reasons for increase in loading was the quantum of profit repatriated abroad by the firm, the Committee asked whether the other wings of the Ministry of Finance did take any action in the matter. The witness stated:

"The question of repatriation of profits by itself, how much should go or how much should not go, certainly is not the business of the Revenue Department. But from that figure we came to the conclusion as to what should be the assessable value of the goods for determining the quantum of duty to which they should be subjected. That was an indication to us that if so much is going out of the country,

actually it should form part of the value of the goods that had come. Therefore, it was loaded. So far as repatriation is concerned, we can say only from commonsense point of view. The information can be given by the Department of Economic Affairs or the Reserve Bank of India."

6.65. The Chairman, Central Board of Excise and Customs added:

"The Customs Department in this sphere happens to be one of those Departments which has started loading operations not only in respect of IBM but also in respect of many firms which were subsidiaries of foreign firms in this country right from early 1950. So, this loading business is not new to the Customs Department. We started that sort of a thing from early 1950. From that time, it is continuing not only for IBM but, by and large, for subsidiaries of foreign companies, here, whose invoice prices *prima facie* need not reflect the independent prices to independent buyers. So, I should say, here at least, perhaps, this hon. Committee would be glad to observe that so far as we are concerned, this sort of a thing has been very much kept in view. Not only that, in 1962, we changed the basis of this. It was made Inter-company billing prices plus 73 per cent. Now, the Assistant Collector has come to the view that it has to be loaded even further on the basis of the data now available, of independent prices of outright sale, in foreign countries, in their domestic markets."

6.66. The Committee asked whether any attempts have been made to quantify the extent of under-invoicing indulged in by the multinationals like IBM. The Chairman, Central Board of Excise and Customs stated:

"The whole idea of loading pre-supposes that there was an under invoicing and you are loading to bring it up to the proper price as the Customs House thinks should be determined. The very idea of loading means that originally there was an under-invoicing."

"This is a type of under-invoicing where one cannot go to the extent of imposing penalties for deliberate under-invoicing in the sense that they will be able to give you invoices from one country to the other and support that this is their system all over the world. They have produced

documentary evidence. But according to our law, we have come to a conclusion that that might be so, but still it does not represent the price to an independent importer and that it still represents the price to a related importer. To that extent, according to our law, we are entitled to load it to a certain extent. Previously, of course, whatever the Board's ruling, they have been acting upto that. Now, the Assistant Collector has fixed a new loading formula. They have gone in for appeal. Let us see what happens to that."

6.67. In reply to a question whether the quantum of increase in loading suggests that there has been under-invoicing to a very large extent, the witness replied:

"Yes, it does. As I said, you must have available some data to go by. If you have the invoices for sales to independent importers available, there is no difficulty; that would be the price. On the contrary, when you don't have them or when the system is as it is in this country—by and large it is a fact that these are not sold but rented out—you have to look for details elsewhere. In the last review they detected that now some independent sales are taking place abroad in those countries, and the Customs Department have based their case on the fact that they derive the value in this country abroad from which the goods are coming. There is some sort of independent sale in that country which, presumably was not available earlier. So, earlier, even in the normal course I would say 73 per cent is substantial loading. The Assistant Collector says it is now 350 per cent—but that, as I said, comes much later; that relates to the loading of capital equipment for importing and for manufacturing this data processing machines and other things. Otherwise, for data processing machines it will vary from machines to machines depending on what the price of that machine is in the foreign market."

6.68. The Committee enquired whether with the increase in loading the prices charged by IBM from its customers are also increased correspondingly. The Chairman, Central Board of Excise and Customs explained:

"The situation arises, as explained in the beginning, because there are hardly any outright sales. These machines are mostly rented out and they are charged for on a monthly rental basis. That is why, from 1956 to 1962 our method

of finding the assessable value was to deduce it from the rentals. The figure is taken—as to what is the rental—and from that the assessable value is deduced.”

He added:

“If outright sales value were available in the country, the problem is simple. All this difficulty has arisen because we do not have sales to independent parties, they are rented out from one to another. That is basically the crux of the question.”

6.69. On the question of the appeal filed by IBM against the decision of the Customs Department for loading of IBM imports the witness stated:

“These people filed the appeal on February 30, 1975. Arising out of the reading of the appeal, various other queries had to be made to these people, and I believe they have answered them now. The appellate Collector will start the hearing and decide the case. In the meantime, our revenue has not suffered because there is a guarantee and bond from this company that if the decision goes against them and if any loading, it will be retrospective from the 25th August, 1973.”

6.70. In regard to the loading of the imports made by ICL, the Committee were informed during evidence:

“So far as ICL is concerned, assessment had been made provisional and their books of accounts are being studied. The process of final determination of loading will start soon.”

6.71. In this connection, the Chairman, Central Board of Excise and Customs also stated:

“The idea of provisional assessment is that as and when a final decision is taken, it will be retrospective. It will be effective from the date of the provisional assessment which started already. So, if further data cannot be collected immediately and the decision is likely to take time, we will do provisional assessment, both by the Customs Department and the Excise. Of course, the right of appeal will be there. The provisional assessment procedure safeguards the revenue that is going to accrue, if any, and that is going to be from the retrospective date.”

6.72. The Committee asked whether any punitive action against the IBM had been initiated for the under invoicing which was evident from the fact that against 73 per cent the loading had now been increased to 350 per cent. The Chairman, Central Board of Excise and Customs stated:

"I do not think any punitive action has been initiated in this regard because so far as the price structure all over the world is concerned it is based on the inter-company billing price and it is not that they are only billing us like that. Now, the position with the department is that the company is all along following a system and we have no quarrel over it but so far as the provisions of Customs Act are concerned, the value declared does not correspond to what is ought to be. Therefore, the Department has the right to determine the value for duty purposes. You raised a question regarding foreign exchange. I should like to throw some light on that also. So far as the remittance of foreign exchange is concerned it was strictly on the basis of their invoice price which is merely this inter-company billing price. Although we are loading it in this country, the Customs Department is loading the invoice with various percentages, but that money does not get remitted. But the only original invoice price gets remitted."

#### *Drawback*

6.73. The Committee desired to be furnished with details of the total customs duty realised on all imports by IBM year-wise as also the total drawback paid to the firm during the last 6 years. The Central Board of Excise and Customs have, in a note, stated:

"Statistics in the Custom Houses are not maintained, importer or exporter-wise but these are maintained on the basis of the commodity description and coding system prescribed by the D.G.C.I&S. Compilation of the requisite information would, therefore, involve scanning of voluminous records of all imports and exports at various Customs Houses pertaining to six years period and would require considerable time and manpower."

6.74. Asked about the basis, if any, on which drawback has actually been claimed and paid on duty-paid components used in IBM

manufactures, a representative of the Central Board of Excise and Customs stated in evidence:

“The drawback fixation procedure envisages the actual verification of the records of the firm; and it is only after verifying that the duty has been paid on certain components which go into the manufacture of a finished item that the draw-back rates are fixed.”

6.75. The Committee enquired about the percentage of claim actually verified by the Customs out of the total claims for drawback preferred by IBM and ICL. A representative of the Central Board of Excise and Customs stated:

“In so far as IBM is concerned, on the basis of information readily available, there are two types of machines which they export. One is type 029, and the other is 129. Actually, whatever components go into the manufacture of these two types, the extent of duty paid is actually verified and then the drawbacks, given at the time of export of these types of machines, is fixed. It is only a question of identifying at the point of export whether the type is 029 or 129. The quantum of drawback is paid on the basis already fixed. Verifying in each case does not arise. It is already pre-determined.”

He added:

“The claims for the fixation of a drawback in respect of the type—say 029—are verified with reference to the actual components that go into the manufacture of this particular type of machine”.

6.76. In this context the Director Receipt Audit informed the Committee as under:

“In so far as the IBM machines are concerned, as I had said, the components are imported and put into the “AS IS” machines which are just junk and are re-assembled here. When they are put into the new machine and the re-assembled one is exported, the identification of the component which has paid the duty, is necessary to fix the draw-back. The Ministry, in their letters and references to me, have said that they have not been able to do that verification, with the result that if a higher-duty-paid component is not fitted into a machine being exported, but is

fitted elsewhere, and a declaration is made that they have fitted it into the former, nobody is wiser about it. They have themselves confessed it. We have also attempted to verify. We could not do it. Verification on a selective basis was attempted, to satisfy ourselves, to the extent of 1.25 per cent of the total number of items. We were not able to succeed, there as well. So, we always resort to a cut in the drawback. 30 per cent cut is done and only 70 per cent is allowed. This has not been done satisfactorily. The Collector himself has been telling the Board that he is not able to do complete verification. He has done it on a selective basis. So, this dark area of what duty-paid goods have been put into the machines, neither they nor we have been able to find out. Further calculations of duty-paid documents were all in tape, in code, in their language, in IBM language. The local IBM people say they could not decode it; neither could I decode it. They say this is some code which they have kept in a New York library. Then I expressed a doubt that if a tape is tempered with and some other document is kept in its place, how are we sure about it?"

6.77. In a note subsequently furnished to the Committee, the Central Board of Excise and Customs have stated:

"M/s. IBM started manufacture of 129 type machines from 1-4-1972 under a selective bond procedure. Under this scheme about 70 per cent of the components were bonded and no duty was paid on them. The balance imported components were cleared after payment of customs duty. Since till then the verification of data had been done mainly with reference to their imports, the Ministry called for the details of the imported components and their usage in the form prescribed for this purpose. The data was verified by the officers of the Drawback Directorate in the Ministry initially and subsequently at the factory premises. The verification was confined to a select percentage of components which had a high incidence of duty. Based on the verification done by the Ministry, the drawback rate proposal was sent to the office of the Comptroller and Auditor General for pre-audit. The office of the Comptroller and Auditor General inter-

*alia*, observed that the total verification done by the Ministry was only to the extent of 1.25 per cent of the Bills of Entry and 17 per cent of the total incidence of duty and queried whether the percentage check was adequate. They also desired to know whether the bonds executed by the firm in respect of the bonded components have been cancelled by the Bombay Custom House as in the proposal made by the Ministry there was no mention of the cancellation of such bonds. Thereafter an officer from the Ministry along with a representative of Comptroller and Auditor General's office visited the factory of M/s. IBM at Bombay in January, 1974 and carried out further verification. Even after this verification the Comptroller and Auditor General's office did not appear to be satisfied with the extent of verification. After holding discussion with the concerned officer of the Comptroller and Auditor General's office, the officer of the Drawback Directorate carried out further verification of the data at Bombay in July, 1974 and raised the percentage of check to nearly 60 per cent of the total incidence of duty involved. It was also pointed out that since the entire bonding procedure is supervised by the Customs staff posted at the party's factory, the Customs would ensure that all the formalities of the bond are duly fulfilled. On 22-11-1973 the Comptroller and Auditor General's office took a general decision to dis-associate themselves from the pre-audit of drawback rates before their announcement. During this period from 1-12-1973 to 31-10-1974 drawback rates were being fixed and announced by the Drawback Directorate without pre-check by Comptroller and Auditor General's Audit. Drawback amounting to Rs. 33,32,560.82 worked out in respect of 688 machines on the basis of the verification carried out as mentioned above was determined by the Ministry on 12-8-1974 as drawback due subject to the fulfilment of usual condition as stated in the rules. The amount has not yet been paid by the Bombay Custom House."

6.78. In another note it has been stated:

"Drawback rates are fixed by the Ministry in respect of each type and model of machines manufactured by IBM. At



this time it is ensured, on the basis of the test check of the particulars of the importation of the components given by the firm, that drawback is claimed only in respect of duty paid on imported components used in the machines exported. It is also ensured that the total amount of duty claimed does not exceed the duties collected on the components as apportioned to the quantities of the machines exported.

At the time of export exporters are required to declare under Rule 11 of the Drawback Rules, 1971 that they are claiming drawback on the duty paid materials alone. The Customs authorities verify the description and the type and model of particular machine being exported and subsequently drawback is sanctioned having regard to the rates fixed by the Government for the particular type and model of machines.

There are provisions under the existing rules and the Customs Act to take action for any mis-declaration."

"Physical verification of machines sought to be exported under claim of drawback is restricted to 5 per cent of the goods tendered for export. This could be 100 per cent in cases of doubts or discrepancies. The documentary verification of drawback shipping Bills for sanction of drawback, however, is cent per cent."

6.79. The Committee desired to know whether there has been any audit objection to the payment of drawback to IBM and if so what were the amounts withheld or paid to the company in spite of the audit objections. In a note, the Central Board of Excise and Customs have stated:

"The Collector of Customs, Bombay, has informed that there has been no objection either from the I.A.D. or C.R.A. with regard to the payment of drawback to M/s. IBM".

6.80. It was understood that IBM had been allowed to import certain items on payment of import duty and certain others under bond.

6.81. The Committee enquired whether the Rules provided for partial bonded manufacture and if not, on what considerations this had been allowed in the case of IBM. A note on the subject furnished by the Central Board of Excise and Customs reads as under:

“M/s. I.B.M. World Trade Corporation, were allowed, with effect from 1-4-1972 to use bonded components and duty paid components and other components for manufacturing type 129 machines and parts. It appears that this was done under Rule 4(ii) and (iii) read with Rule 5(b) of the Warehouse Regulations, 1966. The view taken was that there is no bar to imported goods on which there duty has been paid being taken into the warehouse, like indigenous goods.

Recently, M's. I.B.M. have been given the option either to use wholly duty paid components or bonded components in their manufacturing process, but as export goods are involved, till the completion of their programme for type 129 machines, which is expected to be completed by 30-4-1976, the Custom House has permitted them to continue their operation under the present procedure.”

6.82. In view of the fact that items imported on payment of duty as well as items imported on bond are liable to be used in the same machine, the Committee enquired how do the Customs authorities segregate such items and ensure that the duty correctly leviable on bonded items, has in fact, been paid by IBM. The Central Board of Excise and Customs have in a note stated:

“The bonded components are issued from the private Bonded warehouses of IBM by Preventive Officers posted at their factory and are escorted under customs supervision to the manufacturing premises where these are used in the manufacture of machines meant exclusively for export. The Bill of Material shows the quantity required for each type of machine and on the basis thereof it is possible to correlate the number of components consumed, with the number of machines manufactured and exported.

However, in order to ensure that parts used for the manufacture of types 029 and 129 machines manufactured by M's. I.B.M. in the same factory premises, do not get mixed

up, segregation has recently been effected by erecting a partition to separate the area in the factory where each of the machines are being assembled. Besides, supplementary rules and regulations have also been framed incorporating the following details in respect of type 129 machines:

- (1) List of imported components parts/assemblies non-duty paid (in bond).
- (2) List of imported components/parts assemblies duty paid.
- (3) List of indigenous components parts/assemblies.

The Preventive Officers posted at the factory are also maintaining accounts for all the parts used in the manufacturing process, which is carried out under control by the Customs staff."

#### *Excise duty realisations*

6.83. Before a licence is granted under the Central Excise Act for manufacturing operations, the manufacturer has to make a licence application in the prescribed form. The Committee asked when a licence was granted under the Central Excise Act for manufacturing operations by the IBM, what was the declaration made by the company of its actual manufacturing operations. In a note on the subject, the Central Board of Excise and Customs have stated:

"The Collector of Central Excise, Bombay has reported that M/s. IBM were granted Central Excise licence bearing No. 12/OM/70, dated 24-3-70 for manufacture of 'Office Machinery' falling under T.I. 33-D. In the schedule to the application for licence they mentioned that they expect to manufacture 3059 units. Later they filed a classification list on 1-6-1970 wherein particulars of all excisable goods produced, manufactured or warehoused were shown as "Office Machinery" falling under T.I. 33-D. No other declaration about actual manufacturing operations is on record with the department."

6.84. Since it is well known that in the past IBM have only been importing machines on an "AS IS" basis alongwith certain components and refurbishing or reconditioning them in their Indian Plants, the Committee asked whether these operations could be strictly termed as a manufacturing activity. In this connection the Central Board of Excise and Customs have, in a note stated:

"Section 2(f) of Central Excise and Salt Act, 1944 has defined "manufacture" as including any process incidental or ancillary to the completion of a manufactured product. Re-furnishing or reconditioning of imported machines with components could be deemed as manufacture.

It may, however, be clarified that when they applied for an L-4 licence in 1970, when excise duty was imposed on "Office Machines and Apparatus" vide item 33-D of the Central Excise Tariff, the IBM World Trade Corporation declared in their AL-4 that, they would be manufacturing "3059 units". The description of the units was also furnished. It may thus be seen that they have themselves agreed that it is manufacture of exisable goods. They are producing the bulk of their units indigenously.

It is also ascertained that IBM have a customs bonded warehouse and import components and manufacture machines exclusively for export by using these components. The machine is designated as "Machine No. 129". It is stated that these operations are done under Customs supervision. In so far as their meeting the indigenous requirements is concerned, it is ascertained from the license that while the bulk is indigenously manufactured, they import two types of Machines designated as "Machine No. 077" and "Machine No. 514" "as is" condition. It is learnt that they pay 60 per cent basic Customs duty, 15 per cent Aux. duty, and 15 per cent countervailing duty on such imports."

6.85. In this context a representative of the Deptt. of Electronics stated:

"There are certain items like 029 punches, totally on the manufacturing programme of IBM. But as far as "As Is" programme is concerned, the view of the Electronics Department is, this should be treated 'as is assembly programmes.' "

6.86. The Committee were informed that normally the decision to decide, as to what constitutes a manufacturing activity, vests with the Assistant Collector. The Secretary, Deptt. of Expenditure stated in this connection:

"There was no question of exercise of discretion involved at the excise end which can be questioned. In order to pay duty the firm filled up a form which was accepted."

He added:

"The manufacturing activity was under a licence given by the Ministry of Industrial Development. Thereafter if they applied for excise licence, the non-grant of that licence would have resulted in non-payment of excise duty."

6.87. In the same context, the Chairman, Central Board of Excise and Customs stated:

"...these matters are gone into very thoroughly. We have not accepted the invoice value of the IBM at its fact value right from 1956 and we started loading. I say this to assure the Committee that adequate attention is being paid not only to IBM but where there are related firms. But in relation to excise, there is no discretion involved. It is not as though the Assistant Collector has to grant a licence for starting a manufacture. That he has already got from the Ministry of Industrial Development. From the point of view of excise the moment any concern starts manufacturing goods liable to excise, the firm has to get an excise licence. Otherwise the firm will be infringing the law. That is entirely for the purpose of revenue."

6.88. The Committee drew attention to the definition of manufacture given in a Supreme Court judgment, under which manufacture means bringing in new goods different in character from what was available earlier and the assembling world not tantamount to manufacture. The Chairman, Central Board of Excise and Customs stated:

"Unless it is manufacture, the firm will not apply for an excise licence. Clever people like IBM will not unnecessarily pay money to Government."

6.89. On being pointed out that clever people like IBM deserve a special treatment, the witness stated:

"I entirely agree with you. We are taking sufficient care. At your instance, we will take additional care in the matter of issue of licences by the Central Excise, but there is hardly any discretion in the matter."

6.90. The Committee desired to know what items were offered by IBM for excise duty assessment and in particular did they offer any

assessment under Section 17 of the Customs Act. In a note, the Central Board of Excise and Customs have stated:

“Items falling under Central Excise Tariff item 33-D are offered for assessment to excise duty since 1970. Lately they are also presenting ‘Punch Cards’ for assessment at 1 per cent excise duty against Central Excise Tariff item No. 68 and are being assessed accordingly. In respect of assessment under Section 17 of the Customs Act the position is being ascertained and will be intimated on receipt.”

6.91. The Committee were informed that the IBM has been charging from its customers “one-time installation charges” to recover the import duty on any imported component of the machine. In this connection the Department of Electronics have in a note stated:

“On a query with Messrs. IBM World Trade Corporation, they had clarified the basis for ‘one-time-installation charges’ as under:—

‘One-time Installation Charges are comprised of all costs associated with the moving of the equipment from the supplying source to the customer locations. These costs include casing and packing, freight, insurance, rigging and drayage, custom duties, clearing and handling expenses, etc. These costs, which are not recovered in the international base price are recovered separately from the customers on actual or average basis.’

On further clarification, IBM have informed that duty elements on imported components in respect of indigenously manufactured equipments were also recovered through such one-time installation charges.

Such duty elements should get included in the ex-factory prices of the equipment. This aspect has also come up for consideration by the Inter-Ministerial Group going into the prices/rentals of IBM and ICL and will get elaborated in their Report.”

6.92. During evidence the Committee asked whether the exclusion of elements of cost from the ex-factory prices affect excise duty realisations and amounts to tax evasion by IBM in an indirect way. A representative of the Central Board of Excise and Customs stated:

“According to our information, all these elements of cost are included for the purposes of excise assessment. May be

this will need verification, if the information of the Committee is to the contrary."

6.93. In a note subsequently furnished to the Committee, it has been stated:

"When an excise duty was imposed on Office Machines and apparatus under C.E.T. Item 33-D, the goods manufactured by IBM were provisionally subjected to assessment on a value determined with reference to cost of production, after loading the same with 73 per cent. This was presumably done on the analogy of an order-in-Appeal passed by the Central Board of Excise and Customs, wherein the Board had held that value of the data processing Machines and spares thereof imported after 1st May, 1962 be determined on the basis of inter company billing price plus 73 per cent.

This mode of provisional assessment culminated in the order passed by the jurisdictional Assistant Collector *vide* his order P-IV (6) 4-33D PL 73/6587, dated the 27th June, 1974. The Assistant Collector issued a reasoned order indicating that the assessable value of the various types of computers and processing machines should be based on the list price of the Machine as well as that of the Features incorporated therein *plus* what is known as 'One time Installation charge'.

Thereupon a demand for payment of differential duty amounting to Rs. 1,71,03,572.65 paise was raised and realised. However, the company went in appeal against this order before the jurisdictional Appellate Collector who ordered a *de-nove* examination. The jurisdictional Assistant Collector of Central Excise is seized of the matter.

It may please be seen from the foregoing that the 'One time charge' is included in the list price and is not excluded."

#### *Income-tax assessments of IBM|ICL*

6.94. The Committee called for details of the amounts actually returned by IBM and ICL as profit and the amounts actually determined by Income-tax Authorities as taxable. The following statements furnished by the Department of Revenue and Insurance give the re-

## quisite information:

Asstt. year	Income returned	Income assessed	Income tax-paid
	Rs.	Rs.	Rs.
<i>M/s. I.B.M. World Trade Corporation</i>			
1964-65	Nil	5,42,135 (loss)	..
1965-66	Nil	7,55,520	3,91,518
1966-67	54,36,010	81,00,830	51,43,135
1967-68	1,20,65,660	1,79,60,070	1,14,91,135
1968-69	1,19,94,94,116	1,43,36,490	1,00,35,543
1969-70	2,47,47,668	2,95,53,440	2,06,72,029
1970-71	3,21,47,823	3,35,97,400	2,32,67,981
1971-72	4,17,60,932	4,27,31,870	2,98,93,647
1972-73	5,96,39,060	6,51,83,730	4,67,51,448
1973-74	7,15,90,017	7,34,66,340	5,39,93,829
<i>M s. International Computers (India) Pvt. Ltd</i>			
		<i>By ITO</i>	<i>By AAC</i>
1964-65	42,11,227 (+)	41,03,802	40,89,070
1965-66	32,35,876 (+)	33,40,309	32,12,310
1966-67	29,30,780	42,69,760	29,33,880
1967-68	20,66,290	33,44,540	22,77,319
1968-69	38,11,910	53,08,060	38,11,910*
1969-70	34,84,090	49,97,590	34,88,910
1970-71	13,72,640	26,01,000	13,82,900
1971-72	43,84,300	53,47,859	43,85,173
1972-73	78,45,550	88,55,241	Set aside
1973-74	1,18,47,740	1,34,56,394 Self-assessment	49,92,119 Adv. tax 60,10,000 8,13,464
1974-75	98,90,760	Asstt. pending—Pre-asstt. tax paid	57,11,914
1975-76		Asstt. pending—Pre-asstt. tax paid	54,58,964

(+)The assessed income is less than the returned income. Reasons are being ascertained

\*Rectified—Rs. 38,15,185 (Asstt. year 1968-69)



6.95. It is seen from the above that the income returned by IBM in 1964-65 was nil. However, the income actually assessed by the income-tax authorities was a loss of Rs. 5,43,135. Asked about the reasons for the assessed income being less than the returned income, the Department of Revenue and Insurance have in a note stated:

"In the return of income filed for 1964-65, the income was shown nil. However, the return was filed subject to the allowance of depreciation, development rebate and prior years' losses carried forward, if any, which are to be allowed statutorily."

6.96. From the details of income returned by IBM and income assessed by income-tax authorities during the assessment years 1966-67 to 1973-74 it appears that substantial additions have been made to the income returned by IBM during these years. The Committee enquired what were the items in respect of which additions were made and also whether these additions were disputed by IBM. A representative of the Central Board of Direct Taxes informed the Committee during evidence:

"I have a note here with me giving details of the main additions which were made by the Income-tax officers in the case of IBM. For the assessment year 1966-67, the first addition was on account of development rebate claimed by the assessee on data processing machines and disallowed by the ITO amounting to Rs. 13.12 lakhs. The second main addition made by the ITO was Rs. 0.46 lakhs on account of excessive expenditure claimed on a convention. The Appellate Assistant Commissioner allowed the first amount added back by the ITO as we mentioned yesterday. This is a claim of development rebate on computers and data processing machines on which we have gone to the High Court ultimately.

In the next year also the first main addition is Rs. 42.45 lakhs on account of loss on account of devaluation in respect of headquarters expenses allocable to the Indian branch which the assessee claimed and the ITO has disallowed it. The second main addition made by the ITO was again on development rebate on data processing machines amounting to Rs. 17.87 lakhs. Again the AAC has allowed this amount. The Tribunal has upheld the AAC's order and we have gone to the High Court against the Tribunal's order.

- In 1968-69 the first main addition made by the ITO is again on development rebate on data processing machines amounting to Rs. 21.34 lakhs. This again has been allowed by the AAC. The second main addition by the ITO amounts to Rs. 2.04 lakhs on account of inadmissible loss on sale of fixed assets added back and excess claim for depreciation disallowed.
- In 1969-70 the first main addition made by the ITO is Rs. 19 lakhs again in respect of development rebate in respect of data processing machines and the second addition is Rs. 28.86 lakhs again on account of exchange loss on actual remittance of headquarters expenses. The AAC has again allowed the development rebate.
- In 1970-71, the first main addition made by the ITO is on development rebate on data processing machines amounting to Rs. 14.95 lakhs, the second main addition is Rs. 16.70 lakhs on account of exchange loss on actual remittances of headquarters expenses and the third addition is Rs. 1.05 lakhs on account of loss of rental equipment written off. The AAC has again allowed the addition of development rebate.
- In 1971-72, the first main addition made by the ITO is Rs. 8.45 lakhs in respect of development rebate on data processing machines and the second addition is Rs. 3.11 lakhs on account of capital expenditure on the Bangalore project which did not come through. The AAC has again allowed development rebate on the data processing machine. In respect of the assessment year 1971-72, the first addition made by the ITO is again in respect of development rebate on the data processing machine amounting to Rs. 18.61 lakhs. The second addition made by the ITO is for Rs. 1.35 lakhs in relation to bad debt claimed by the assessee but not accepted. Again, the AAC has allowed development rebate. The assessee's claim regarding bad debt was allowed by the AAC. In 1973-74, the first addition made is for Rs. 16.76 lakhs again in respect of development rebate on data processing machines and the second addition is for Rs. 1.75 lakhs in respect of gratuity provision. Again, both these additions have been allowed by the AAC. Against his decision on both the points we have gone to the higher appellate authority."

6.97. The Committee desired to know in case the additions made by the income-tax authorities have been accepted by the firm, did it not amount to concealment of income and if so, whether any penal action has been contemplated against the firm. In a note, the Department of Revenue and Insurance have stated:

“Even though some of the additions have been accepted by the company, it may not amount to concealment of income as all the facts in respect of the disputed additions have been disclosed to enable the Department to take a decision on the admissibility of the claim for deduction.”

6.98. From the details of income returned by ICL and assessed by income-tax authorities during the year 1964-65 to 1971-72 it is seen that considerable relief has been allowed by the Appellate Assistant Commissioner, on appeal. In 1970-71, the relief allowed is 50 per cent of the income assessed by the income-tax officer. In respect of other years also, the AAC appears to have more or less accepted the income returned by ICL. The Committee desired to know the grounds on which such large reliefs had been allowed and whether the same had been contested by the Department. In a note, the Department of Revenue and Insurance have stated:

“Substantial relief allowed by the AAC for the assessment years 1964-65 to 1971-72 in the case of ICL is in respect of development rebate on data processing machines. The amount of development rebate disallowed by the ITO and allowed by the AAC are as under:

Assessment Year	Development rebate dis- allowed by the ITO but allowed by the AAC
	Rs.
1964-65	14,730
1965-66	99,782
1966-67	11,01,608
1967-68	10,82,737
1968-69	14,96,115
1969-70	14,61,969
1970-71	12,08,673
1971-72	9,62,686

The claim for development rebate was disallowed by the Income-tax Officer from year to year on the ground that data processing machines and ancillary equipment were in the nature of 'office appliances' and not 'plant and machinery'. The AAC, however, hold that these items constitute plant and machinery and accordingly allowed the assessee's claim. The Departmental appeals filed against the AAC's orders for the assessment years 1964-65 to 1966-67 were dismissed by the Tribunal. The Department has not accepted the Tribunal's decision and reference applications for these years are pending before the Bombay High Court. As regards 1967-68 to 1971-72 assessments, the Tribunal has set aside the orders of the AAC and restored the matter to the AAC's file with a direction to examine the applicability of Section 33(6) of the Income-tax Act. The Department has, however, not accepted the Tribunal's decision and reference applications for these years have also been filed before the Bombay High Court."

6.99. It is further seen that the assessments of income-tax of ICL made by the income-tax officer during the years 1972-73 and 1973-74 were set aside by the Appellate Assistant Commissioner. In reply to a question as to the grounds for the decision of the AAC and whether the same had been contested by the Department, the Department of Revenue and Insurance have in a note stated:

"The assessments for the years 1972-73 and 1973-74 were set aside by the AAC on the ground that the ITO had not examined whether any of the DPMS was installed in any office premises or in residential accommodation to attract the provisions of Sec. 33(6). The decision of the AAC has been accepted as a finding in the applicability of Section 33(6) will strengthen the Department's case to the extent of disallowance of development rebate on equipment installed in office or residential premises."

6.100. During evidence the Committee enquired whether it was not the practice in the income-tax department that more important cases of income-tax assessments were handled by income-tax officers of a very high level and if this was so, whether any special steps have been taken by the income-tax department to make sure of the accuracy of the IBM assessment. A representative of the Department of Revenue and Insurance stated:

"I am subject to correction at the moment—that the assessments in the case of IBM were made at the level of ITO

and they were not scrutinised by any higher officer. But I may add that we are conscious of the fact that such company's cases should receive better attention, and that is why we have centralised cases of all foreign companies with income above Rs. 5 lakhs to be dealt with by a senior officer of the rank of Assistant Commissioner.... So far these cases have been dealt with by the ITO."

6.101. The IBM World Trade Corporation is understood to have set up 2 new subsidiaries corporations in 1974, namely, IBM World Trade America Far East Corporation and IBM World Trade Europe Middle East Africa Corporation. The Branch of IBM operating in India was recognised in the year 1953 by an order dated 23rd May, 1953 as a company. The Committee wanted to know whether the IBM World Trade Corporation had submitted any revised application after its split for fresh recognition as a company. In a written reply, the Department of Revenue and Insurance have stated:—

"The IBM organisation in India continues to be a branch of the IBM World Trade Corporation New York. It is understood that the foreign company has set up 2 new subsidiaries corporations in 1974, namely, IBM World Trade America Far East Corporation and IBM World Trade Europe Middle East Africa Corporation. As the parent company, i.e. IBM World Trade continues as such, without any change in name or form, the question of fresh recognition of the Branch of the company does not arise."

The reply further added that the IBM had not submitted any revised application after its split up for fresh recognition as a company.

6.102. The Committee also asked whether provisions of section 195 of the Income-tax applied to IBM and if so whether deduction of taxes at source was made by the authorised Government Departments or other agencies to meet payment of this company on account of hire charges, maintenance charges or other items of income chargeable to Income Tax. In reply the Ministry have stated as follows:—

"IBM being a non-resident company, the provision of Section 195 of the Income-tax Act is attracted. Till March, 1970 tax at source was not being deducted by the Customers including Government Departments from payments made to the company. However, after the amendment of Sec. 195 by the Finance Act, 1970 the company applied to the

Income-tax Officer for exemption in terms of Sec. 195(3) of the Income-tax Act, 1961. As the company is being regularly assessed to tax in India, the Income-tax Officer has granted a certificate u/s 195(3) of the Income-tax Act authorising the company to receive all payments, not being interest on securities or dividends, without deduction of tax at source for the financial years 1972-73 to 1975-76."

6.103. The Committee had also enquired whether the IBM World Trade Corporation was making available to the Income-tax Department its world balance-sheets and world profit and loss accounts for purposes of enabling the Income-tax Department to determine the true income chargeable to tax under Rule 10 of the Income-tax Rules, and if not, on what basis was the correctness of the Indian Income including the expenses claimed by the company were verified. In a note the Department of Revenue & Insurance stated:

"The Indian branch of the IBM World Trade Corporation maintains separate accounts in respect of its business in India. Such accounts are audited and copies of audited balance-sheets and profit and loss Accounts are being filed along with the returns of income. It appears that the Income-tax Officer is satisfied that the actual amount of income accruing or arising to the company, whether directly or indirectly, is ascertainable with reference to such accounts. The Income-tax Officer has, therefore, not invoked the provisions of Rule 10 of the Income Tax Rules. In the circumstances, the Income-tax Officer has determined the Indian income—liable to tax on the basis of the Branch accounts maintained in India and duly audited by Chartered Accountants."

6.104. The Public Accounts Committee (1974-75) had been informed by the Department of Revenue & Insurance that the Indian branch of IBM was recognised as a company for purposes of Income-tax on two occasions in May, 1953. Asked what were the circumstances under which applications were made in quick succession and two orders were issued, one on 8th May, 1953 and another on 23rd May, 1973. the Department of Revenue & Insurance stated:

"It is clarified that in the order of the Board dated 8-5-1953 recognising the IBM World Trade Corpn. as a company under sub-section (6) of Sec. 2 of the Income-tax Act, 1922, the name of the company was incorrectly typed as 'M/s. IBM World Trading Corporation' instead of "IBM World

Trade Corporation". This typographical error was corrected by a subsequent order dated 23rd May, 1953."

During their examination of Paragraph 17(b) of the Reports of Comptroller & Auditor General for the year 1972-73, Union Govt. (Civil), Revenue Receipts, Vol. II Direct Taxes, the Public Accounts Committee (1974-75) was informed by the Department of Revenue & Insurance that "Copies of the applications made by the assessee (IBM) for being declared as a company are not readily available with the Board."

6.105. The Committee desired to know what were the proposed activities of the company in India as declared in its application. It has been stated in this connection that:

"In its application the company had declared its proposed activities in India as under:

"The company's business consists of rental and servicing of IBM electric punch card accounting machines, the sale and service of electric typewriters and I.D.R. Time Recording Devices."

6.106. Asked whether at the time of recognising it as a company in 1953, for the purpose of the Income Tax Act, any conditions were imposed by Government. In a note, the Department of Revenue & Insurance have stated:

"No condition were imposed by the Government while recognising IBM World Trade Corporation as a company for the purpose of the Income-tax Act as the provisions of Section 2(6) of the Income-tax Act, 1922 do not contemplate the imposition of any conditions."

6.107. In reply to a question whether the activities of IBM in India could be strictly termed as 'manufacturing', a representative of the Department of Revenue and Insurance have stated in evidence:

"The ITO informs me that this question was gone into at the time of assessment; and the activities relating to the manufacture of punch cards and the reconditioning of machines were considered as manufacturing activity. Of course their main source of income is hiring. But that is not considered as a manufacturing activity for the purpose of Income-tax Act."

6.108. In a note on the subject subsequently furnished to the Committee, the Department of Revenue & Insurance have stated:

“What constitutes ‘manufacturing’ is a highly debatable issue. Various Courts have held that assembly of bus or truck chassis from parts imported in knocked-down condition, the process of converting boulders into small stones with the aid of machinery, the process of printing balance-sheets, dividend warrants, pamphlets etc. by a printing press and that of refining crude oil are manufacturing processes. It is understood that the company was granted an industrial licence for commencing manufacturing activities in India by the Government and the company has been manufacturing the following types of data processing machines in India from 1963 onwards:

- (a) Card punches
- (b) Card Verifiers
- (c) Printing card punches
- (d) Collators
- (e) Sorters
- (f) Accounting Machines
- (g) Reproducing punches
- (h) Electronic Calculators
- (i) Tape drives
- (j) Printers, and
- (k) Card data recorders.

The company has also been subject to the levy of Central Excise duty on the items manufactured by it, wherever such duty is leviable.

However, the entire issue whether the company’s activities in India can be termed strictly ‘manufacturing’ will be examined in detail during the course of the re-assessment proceedings for the year 1967-68 and onwards.”

6.109. The Committee desired to know on what items of machinery the IBM claimed development rebate and what were the items on which rebate was allowed by Income-tax Deptt. A representative of the Deptt. of Revenue & Insurance stated during evidence:

“The company claimed development rebate on data processing machines. The income-tax officer disallowed it on the ground that they are office appliances and, therefore, development rebate is not permissible in respect thereof.”



6.110. In reply to a question whether rebate was claimed on the machines let out on hire to various Government Departments, the witness replied:

“Yes, Sir. The claim was in the reference to machines hired out also, but we did not allow it.”

6.111. The Committee pointed out that development rebate was available only in respect of new machines and asked why such rebate was allowed on the imported “AS IS” machines which had been reconditioned and refurnished only in India. A representative of the Department of Revenue & Insurance stated:

“It is true that the first premise in the law is that development rebate is permissible only on new machinery. But, we have specific provisions in our law. Section 33(IA) permits grant of development rebate on second hand machinery under certain circumstances and those conditions are: (1) such machinery or plant was not used in India at any time previous to the date of such installation.”

6.112. The details of the development rebate claimed on machines let out on hire to various parties including Government Departments as furnished by the Department of Revenue & Insurance are given below:

Assessment Year	Amount (Rs.)
1962-63	350,870
1963-64	169,595
1964-65	324,003
1965-66	1338,055
1966-67	311,717
1967-68	1787,062
1968-69	21,23182
1969-70	1859,878
1970-71	1495,392
1971-72	845,517
1972-73	1867,943
1973-74	1675,911

*Depreciation*

6.113. The amounts claimed as 'depreciation' by I.B.M. in the assessment years 1965-66 to 1975-76 and the amounts allowed by the income tax department during the respective years, as intimated by the Department of Revenue & Insurance are given below:

Assessment Year	Amount Claimed	Amount allowed
1965-66 . . . . .	18,06,953	17,99,555
1966-67 . . . . .	26,78,369	26,62,988
1967-68 . . . . .	39,26,375	39,76,852
1968-69 . . . . .	56,74,067	56,18,774
1969-70 . . . . .	65,86,626	65,76,053
1970-71 . . . . .	97,43,920	97,44,020
1971-72 . . . . .	9,144,023	91,44,023
1972-73 . . . . .	1,04,30,607	1,04,30,607
1973-74 . . . . .	1,11,27,095	1,11,27,095
1974-75 . . . . .	1,12,80,922	Asstt. not yet completed.
1975-76 . . . . .	1,32,59,420	Do.

6.114. The Committee asked what checks are exercised by the income tax officers to ensure that claims towards depreciation are genuine and not inflated. A representative of the Department of Revenue & Insurance stated in evidence:

"Regarding the claim of depreciation, there are four points. One is the actual cost of the machinery, the other is the prescribed rate, the third is the prescribed particulars to be furnished and the fourth is whether it is used for the purpose of the business".

6.115. In a note subsequently furnished to the Committee, it has been stated:

"Under the Income-tax Rules, depreciation is allowed on various assets used in the business (other than ships) at fixed prescribed rates on their written down values. Therefore, apart from ascertaining the original cost of any plant or machinery at the time of installation and applying the prescribed rates and verifying whether the plant or ma-

chinery was used for the purposes of business during the relevant year, no other checks are necessary to ensure that depreciation claimed is genuine and not inflated. The Ministry is satisfied with the adequacy of the scrutiny at present being exercised in this regard."

6.116. In view of the fact that IBM had, in the past, imported Data Processing equipment on 'As Is' basis and made them available to its customer after some refurbishing, the Committee were given to understand that a large number of machines having no book value were in circulation, earning machine rentals at exorbitant, fixed rates. The Committee asked whether any attempt was being made by the Income-tax authorities, before allowing depreciation on such machines, to thoroughly scrutinise such claims so as to establish their genuineness. In a note, the Department of Revenue & Insurance have stated:

"In view of the fact that for Income-tax purpose depreciation is allowed on the basis of written down values of assets, the question of allowing depreciation on assets having no book value does not arise. However, Department also exercises a check that the total depreciation allowed on any item of plant and machinery does not exceed its original cost."

6.117. The Committee pointed out that while IBM recovers depreciation in respect of some of the machines based on a 4 year life, such machines really last for years and years. If this is so, has not there been an excess claim on account of depreciation by IBM thereby reducing its taxable profits in some years. In this connection, the Department of Revenue and Insurance have stated:

"It is understood that the company is writing off depreciation in its books of account on straight-line method, based on the life of certain machines at 4 years and certain others at 6 years and so on. But irrespective of the amount of depreciation charged in the books of the company, for Income-tax purposes allowance towards depreciation is strictly governed by the Income-tax Rules. By charging excess depreciation in the books of accounts the taxable profits are not affected."

### *Tax Credit Certificates*

6.118. The Committee desired to know whether the company was given any tax credit certificate under section 280(z) (b) on the

ground that it was manufacturing and producing items included in the First Schedule of the Industries Development Act. The Committee also asked what was the total of the tax credit certificates issued during the past ten years and for which manufacturing priority item in the First Schedule. In a note, the Department of Revenue and Insurance have stated:

"The company was granted provisional tax credit certificates u/s 280(z) (b) accepting its claim that it was manufacturing electronic equipment in India falling under item No. 5(8) of the First Schedule to the Industries (Development Regulations) Act, 1951. Details of tax credit certificates given to the company are given below:

Assessment year	Order dated	Amount of Tax Credit	Credit Tax Certificate No. and date
1967-68 . . . . .	22-12-1971	3,02,085	000499/024914 dt. 22-12-71
1968-69 . . . . .	22-12-1971	6,23,082	000499/024913 dt. 22-12-71.
1969-70 . . . . .	22-12-1971	9,73,635	000499/025912 dt. 24-12-71.
1970-71 . . . . .	22-12-1971	15,75,382	000499/024911 dt. 22-12-71.
		<u>34,74,184</u>	

6.119. To a question whether tax credit certificates were also issued in respect of income arising from the rentals of the machines, the Department of Revenue and Insurance have replied:

"In issuing tax credit certificates the income arising from rentals of machines were also taken into consideration.

The assessments for the years 1967-68 to 1970-71 for which tax credit certificates have been provisionally issued are being reopened u/s 147(a) and the correct amount of tax credit certificate admissible will be finally determined during the course of the reassessment proceedings."

#### *Head Office expenses*

6.120. In regard to the procedure followed in the income-tax department for the assessment of Head Office expenses, the Chairman, Central Board of Direct Taxes informed the Committee during evidence:

"In making assessment, head office expenditure is also one of the items of expenditure that may be claimed and allowed

to an assessee. When the head office expenses are claimed, the Income-tax Officer scrutinises the claim and, after satisfying himself what amount should be allowed, allows such amount as head office expenses. Later on a certificate is given to the Reserve Bank that this amount has allowed as head office expenses in computing the income of the company."

He added:

"Head office expenses comprise of various items. The income-tax officer goes through these items to see whether they are attributable to the business carried on in India. After he satisfies himself in respect of each item, he allows the expenditure."

6.121. The Committee enquired whether the figures regarding the total head office expenses of a foreign company were made available to the income tax authorities and what was the basis for apportioning these expenses to the Indian Branches. The Chairman, Central Board of Direct Taxes stated:

"We do no apportion. They claim certain head office expenditure. We ask them what it is comprised of, and then the income tax officer goes through those items to satisfy himself about the admissibility of the claim."

He further explained:

"The general formula for allocation of Head office expenses in this case is the proportion that the Indian receipts bear in relation to the total world receipts."

6.122. Asked whether IBM was furnishing details of their total world head office expenses, the Chairman, Central Board of Direct Taxes stated:

"Previously, they were not doing so. Actually we have started asking them to produce the books of accounts of the head office. We did it in the case of Grindlays Bank. In the case of IBM also we have asked them to produce the accounts of Head Office."

6.123. In reply to a question whether the firm has actually produced their Head office accounts, the witness replied:

“Actually we have started asking for this information only recently and they have started giving it.”

6.124. On being asked as to how the Head Office expenses were determined prior to the procedure now being adopted, the witness stated:

“The question of head office expenditure was being examined earlier, but not to the extent to which it should have been.”

He added:

“I am told that they were furnishing an auditors' certificate which was accepted.”

6.125. In this context the Director, Receipt Audit informed the Committee:

“What the Chairman of the Central Board said is largely correct. Upto the date this Committee was seized of the problem while discussing the National and Grindlays Bank, a kind of practice had been developed by which the Department has been accepting the auditor's certificate regarding the head office expenses or other breakup. This has been brought out in the Annexure to the Report on the National and Grindlays Bank submitted to the Committee, and there is a note by the Deputy Secretary of the Ministry of Finance giving completely what has been happening in regard to all such foreign concerns. But the law is not totally helpless in this regard. In the case of a non-resident company or a non-resident concern, Rule 10 of the Income-tax Rules provides that the Income-tax Officer can estimate the Indian income with reference to the total world receipts, to put it very broadly. That means that he has to go into the details. For that purpose he can certainly summon all that is required, the total world balance sheet, the total world profit and loss account etc. Certainly the Act gives him power which now they are exercising to look into and locate what exactly the expenditure relatable to this country is. Not only that, whether any income which is deemed to accrue or arise in India can be determined by the Income-tax Department. That is more important than the expenditure itself.”

6.126. The details of the remittances allowed by the Reserve Bank of India to IBM on account of Head Office expenses are given below:

Period to which the remittance relates (year ended 31st December)	Amount \$	Date of approval	Date of remittance
1953--1961 . . .	211,343	20-2-1967 and 18-1-1968	US\$132,961.87 on 26-7-1967 US\$78,392.18 on 2-2-1968
1962 . . . . .	117,380	15-7-1968	July 19, 1968
1963 . . . . .	177,953	30-11-1968	
1964 . . . . .	513,932	24-12-1968	December 1968
1965 . . . . .	605,487	3-12-1969	December 9, 1969
1966 . . . . .	618,534	28-12-1970	December 29, 1970
1967 . . . . .	605,761	11-11-1971	November 26, 1971
1968 . . . . .	660,224		..
1969 . . . . .	748,328	7-8-1972	August 25, 1972
1970 . . . . .	767,968		
1971 . . . . .	998,837		

6.127. The Reserve Bank of India have also intimated that:

"In December, 1974, the President of the company in USA advised us that during the years 1966 to 1970 they had charged the Indian branch head office expenses in excess by US \$ 450,498 due to misinterpretation of the formula adopted and that had this amount been routed through their Profit and Loss Account they would have had to pay US \$ 338,922 by way of additional taxes on the excess amount and the balance of US \$ 111,576 only would have been admissible as remittable profit. Accordingly they have repatriated to India US \$ 338,992 on 20th December, 1974. They had also stated that for the year 1971 and 1972 also the amount payable by the Indian branch has to be revised. Accordingly the company had advised that they would submit a fresh application for remittance of Head Office expenses for 1971 for a reduced amount. Amount of Head Office expenses for 1971 was revised by the company from \$ 998,837 to \$ 850,622 and the company filed a fresh application for this amount to New Delhi office on 7th March,

1975. New Delhi Office have been advised to deal with this application in terms of current instructions, effective from the 3rd May, 1975 according to which only the total current surplus of the Indian branch (Indian income less Indian expenses *without* any allowance for Head Office expenses) after deduction of tax amount of surplus is remittable. The company have also reportedly filed fresh income-tax returns for the accounting years 1966 to 1972 (assessment years 1967-68 to 1973-74) and have reportedly paid Rs. 46,29,148 on 22nd November, 1974 as additional tax."

6.128. The Committee desired to know the methodology adopted by the Reserve Bank of India to ensure that the remittance allowed by the Bank on account of Head Office expenses and profits etc. were in accordance with the rules on the subject. A representative of the Reserve Bank stated in evidence:

"Coming to the Head Office expenses and the methodology about remittances, I want to explain a little for your information. These remittances are allowed by us on the basis of the income-tax officers' certificates that the amounts were being admitted by them as deductible expenses in the assessments for the relevant years, which were in the process of completion. This is because the assessments by the income-tax department take time. So, at the time the application is submitted to us, we have not on our hand the final assessment order on the subject. So, we had allowed these remittances on the basis of income-tax officers' certificates that they are amounts admitted by the income-tax department."

6.129. The Committee enquired whether any attempt had been made by the Reserve Bank to review the adequacy of the existing procedure, so as to take necessary remedial measures for plugging the loopholes that may exist. The witness stated:

"So far as head office expenses are concerned, the procedure of the certificate of the Income-tax Department has since been changed and we are to allow it on the basis of final assessment order of the Income-tax Department. We have circulated instructions to our branches not to allow any head office expenses to any foreign company or bank without seeing the final assessment order of the Income-tax Department."



6.130. Asked why the Reserve Bank was dependent on the income-tax authorities for the determination of the quantum of head office expenses and why was it not playing a more positive role in this field, the Deputy Governor of the Reserve Bank stated:

“We may not have the expertise in these matters. It is like any other expenditure. The Central Board of Direct Taxes alone can decide that.”

6.131. In this context a representative of the Department of Economic Affairs stated during evidence:

“Sir, the Department of Economic Affairs has been reviewing the policy from time to time about the head office expenses. It has been the basic policy that whatever is remittable legally should be allowed to be remitted. The Reserve Bank of India's view is that after a tax is assessed and is paid whatever amount is allowed as profit that should be allowed to be remitted. And whatever the Income-tax authority decides as legal and legitimate expenses on account of the head office expenses should be allowed to be remitted. This is broadly the basic policy but there has been a change in the procedure recently. Earlier they were going by the auditor's certificate. The latest procedure is that no headoffice expenses are to be allowed to be remitted as such. Only the profits after payment of taxes are allowed to be remitted. But, after the assessment, if there is a refund on account of legitimate expenses, like head office expenses, for instance, then that will be allowed to be remitted. Really substantively there has been not much change. It is only a change in procedure.”

6.132. Referring to the question of repatriation of profits by foreign firms in the form of head office expenses or dividend or profits as such, the Committee drew attention to the practice followed in some countries like Afghanistan, Brazil, Vietnam and Guinea where a statutory ceiling had been imposed on the quantum of these remittances. The Deputy Governor, Reserve Bank of India stated in this connection:

“The question whether remittance of profit should be restricted to a particular figure is a matter of Government policy and the Government policy as enunciated on several occasions is that all current profits will be allowed to be remitted. There is no ceiling as far as I know.”

He added:

"The question of policy of remittance of profits is one for Government and I do not think Reserve Bank has any voice in it."

6.133. The Committee asked whether the question of imposing restrictions on the repatriation of profits etc. has ever been considered by Government. A representative of the Department of Economic Affairs stated:

"There are two parts of this question—one is the desirability of imposing restrictions and the other is obligations. As regards the desirability aspect this question has been examined from time to time. Even on the last occasion when the Foreign Exchange Regulation Act was framed and passed after which guidelines were prepared under Section 29 this question was considered. It was thought that if these are restricted and the foreign companies are allowed to retain their profits in India, the chances are that these retained profits will grow at a much faster rate than we would like them to grow. As a result thereof the foreign liabilities of India would grow much more than the case if we allow this money to go abroad. This is the reason why we discourage the acquisition of property also by them. If with this money they acquire property the property will appreciate and finally whatever will be remittable will become a far bigger amount."

He added:

"Government has all along been aware of the fact that there is need to do something regarding this matter and that is why we are trying to tackle it not by imposing restrictions on these remittances but by statutorily compelling these companies to reduce the foreign equity to 40 per cent etc. as laid down in the guidelines. Head office expenses are being tackled not by refusing to allow current transfers of legitimately allowable expenditure, but by forcing the branches to convert themselves into Indian companies so that this problem will disappear in future. As soon as they become Indian companies, the question of head office expenses will immediately disappear. This is the manner in which this question is being tackled."

6.134. On being asked whether the conditions imposed by the International Monetary Fund on the Member States in regard to the rights of the Members to impose restrictions on the making of payments and transfers for current international transactions, were inhibiting the Government from taking any step in this direction, the witness stated:

"As I explained, there are two parts of the question. The basic part is that of desirability of imposing such restrictions. That is why, as I explained, at the time when the FERA guidelines were on, which was the last occasion when it was examined, it was found that it was not a desirable thing to impose these restrictions. The question of going to the IMF would have arisen thereafter if the restrictions had been decided upon. So far as IMF is concerned, as you have rightly said, Sir, without the Fund's approval, these restrictions on current transfers cannot take place. But, with the approval of the Fund, they can take place. Meanwhile, at the time of making certain drawings from the Fund, we have taken upon us certain obligations not to increase the restrictiveness of our system. But, this is not the main reason for which we have said that there should not be any restrictions. The present policy is based on merits."

He added:

"So far as the Articles of the Fund are concerned, this is practically the position. But, while making drawings from the IMF, there were certain agreements entered into under which we had said that we would not increase the restrictiveness. That position changes from time to time. When we make drawings, we repay them and that is over. The basic position is that, as I have said, on policy grounds, this matter has been reviewed and Government has come to the conclusion that it is not a desirable thing to impose such restrictions."

6.135. The Committee desired to know whether Government have made any study of the practices followed in other developing countries in regard to repatriation of profits to foreign countries. The representative of the Department of Economic Affairs stated:

"The restrictions vary from country to country. Every year we generally see what are the changes that are brought

about. What happens is that some countries sometime add to existing restrictions but at the same time they give some more incentives; they may place restrictions or repatriations of dividends of certain companies but side by side, they sometimes say that for the first five years there would be no taxes at all."

**6.136.** In this context the Secretary, Department of Expenditure stated:

"I think, there is some confusion between the exchange restrictions and for the laws of the country which regulate the amounts of foreign exchange that can be paid under these various heads. We have, of course, in the Ministry the information of both kinds. I would submit that our laws on royalties and the rest have been well-thought out and evolved over a much longer period of time than what most of the countries you have mentioned have done. In many international forums, other countries have accepted our formulations and have adopted them rather than our having to learn from a country like Columbia or whichever else may be about regulating royalty and other payments."

**6.137.** In response to a question, the representative of the Department of Economic Affairs stated:

"Our tax rates are quite high. Actually, nett of taxes if you compare the rates of return—as the Chief Cost Accounts Officer will bear out—they are not that high even in the case of IBM as compared to their operations else where in the world. But that is not the main point. The answer to your question, Sir, is that we are trying to tackle it by (a) converting these branches into Indian companies, (b) by forcing the foreign companies to reduce their equity to 40 per cent and so, so that the profits to be repatriated will not be a very large amount because it will only be related to 40 per cent of the equity."

**6.138.** In reply to a question whether any serious exercise in regard to this matter of repatriation of profits made by foreign firms preliminary to any decision in this regard, was being done, the witness replied:

"So far as our own policy is concerned, this matter has very recently been considered by the Government at the high-

est level and we have again come to the conclusion that we should not place any restrictions on repatriation of current income after payment of taxes."

6.139. A note furnished by the Department of Economic Affairs on the Government's policy in regard to restrictions on repatriation of profits by foreign companies is reproduced in Appendix X.

#### *Development Rebate Reserve*

6.140. Apart from the remittances of Head Office expenses allowed to IBM, the Reserve Bank have informed that the following remittances on account of profits and development Rebate Reserves have also been allowed in the case of IBM:

	Period to which the remittance relates (year or date - 31st December)	Amount Rs.	Date of Approval	Date of Remittance
Remittances of profits	1961-1969	65,34,284	14-2-1972	February, 72
	1970	1,04,06,029	17-3-1972	May, 72.
	1971	1,49,19,907	8-11-1974	February, 75
Remittances on account of Development Rebate Reserve.	1958	19,420	28-12-1970	29-12-1970
	1960	2,11,610		
	1961	2,67,200		

6.141. During evidence the Deputy Governor of Reserve Bank stated:

"We have allowed repatriation of 4 lakhs 98 thousand which represented the development rebate. It was defreezed after a period of 8 years according to Income-tax rules." The Income Tax Department do not allow them to use the provision made for development rebate for a period of 8 years. They have to keep it either for capital expenditure or some other approved expenditure. After that period, they were allowed to take it as a part of profit and could declare dividend out of that."

6.142. Explaining the provisions of the Income-tax Law in so far as development rebate is concerned, a representative of the Department of Revenue & Insurance stated during evidence:

“Under Section 34 of the Income-tax Law, the deduction on account of development rebate is to be allowed subject to the condition that the development rebate reserve is utilised during a period of eight years for business purposes other than (i) for distribution by way of dividend or profits, and (ii) for remittance outside India as profits or for the creation of any assets outside India.”

6.143. On being pointed out that the development rebate reserve could be used in business and not repatriated as IBM have done, the witness stated:

“Upto eight years, they must employ this in the course of their business. After that they may remit it from the income-tax angle, there is no objection if it is remitted after eight years.”

6.144. In this connection the Director, Receipt Audit stated during evidence:

“When the development rebate system was introduced in 1954 or so, the idea was to give incentive to develop industries in India. You were allowed to build-up a reserve, and that reserve should be kept in tact. The idea is not to fritter it away by way of dividends or repatriation outside. To keep it for eight years and then to allow a foreign company to take it away and to do nothing for development of industry, that would seem to be against the basic philosophy.”

6.145. The Committee enquired whether it was not a wrong policy to permit a company like IBM to wait for a period of 8 years and then repatriate the amount which should have been utilised for purposes of development work in this country. The Deputy Governor of the Reserve Bank stated:

“So far as I understand, this development rebate is created by an appropriation from profits. When it is defreezed, it goes back to the profits and since profits are repatriable it was allowed. I may also mention that in each case, we had a ‘no objection certificate’ of the Income-tax Department.”

6.146. The Committee find from an analysis of the operating revenues of IBM & ICL that machine rentals have been the principal sources of their revenues in India. In the case of IBM, the percentage of machine rentals to the total operating revenues ranged from 53.39 in 1974 (Rs. 12.57 crores) to 61.10 in 1969 (Rs. 6.12 crores). So far as ICL is concerned, the percentage of machine rentals to their total income in 1975 was 62.25 (Rs. 4.91 crores), and that for 1974 stood at 59.12 (Rs. 4.97 crores). Further major item in the revenues of these companies is the charges on account of data processing. About 9 per cent of the total income of IBM in 1974 was derived from this source.

6.147. The Committee have elsewhere in this report commented on the thoughtless manner in which the machines were taken at exorbitant rent by Government departments and other users. It is strange that Government took no steps to ensure that machines which had been largely brought in on what is called 'As is' basis and being of negligible value had to be somewhat refurbished could at least be acquired by the users at reasonably lowered prices or were hired on commensurate rentals. The Committee feel that if this elementary care had been taken and the rentals fixed on a rational basis after taking into account the import price, the estimated cost of refurbishing, the life of the machine (with particular reference to the depreciation claimed from Income-tax authorities) and also the fact of reasonable charges having to be made for spares and maintenance, Government Departments would have been able to save large amounts of money.

6.148. As noted earlier, one of the chief items of business which provides substantial revenue and profit to the multi-nationals comprises the provision at a price of data processing facilities. It seems now entirely within the technological competence of the Department of Electronics to set up the common computer and data processing facilities to meet the country's requirement. The Committee have elsewhere in the report stressed the need for a time-bound programme to set up these centres in metropolitan and other key regional cities. Such facilities should be such as not only to meet the users' present requirements but also anticipate the steadily growing sophistication in information systems. The Committee wish that the Department of Electronics set up these facilities without delay and in a satisfactory manner, thus obviating any further reason for the foreign companies to function in this area.

6.149. The Committee note from a recent study that the total outflow of foreign exchange as a result of IBM operations in India

works out to about Ra. 10.83 crores during the period 1969 to 1974. At a lesser level, the total outflow of foreign exchange on account of ICL's operations in India comes to about Rs. 9.58 lakhs during the period 1972-73 to 1974-75.

6.150. The Committee cannot appreciate the rationale behind the decision to allow IBM and ICL an import entitlement to the tune of 85 per cent of the value of their export earnings. This concession has enabled these companies to bring in at negligible cost machines which had been outmoded in advanced countries on 'As Is' basis and then to rent them out at exorbitant rates to the users here, including Government Departments. This facility has also enabled the multi-nationals to import punch-card systems and unit-record machines and such other items, which are obsolete elsewhere but could still be palmed off to gullible Indian users at a high margin of profit. Apart from the sharp practice involved, such transactions bring in outmoded, largely superfluous and yet expensive technology which, in effect, retard our own advance.

6.151. The Committee see no reason why Government fell for such a peculiar package arrangement as has just been referred to. In all prudence the details and value of machinery and parts required for turning out export products should have been scrutinised at some depth. It was all the more necessary to ensure that the machinery and parts imported for the internal market truly conformed to the Government's thinking and policy on computers and that the equipment so imported was best suited to the technological requirements of the country. In any case, Government should have taken pains to see that there was a co-relation between the cost at which the goods were imported and at which they were made available to the end users including Government Departments, in order to prevent all scope for defrauding the public and the exchequer by dexterious manipulations. The Committee would like to recall in this context the views put forward by the Secretary, Electronics Commission, during the course of evidence before the Committee:

**"We are clearly of the view if there is to be any meaningful role of the operations of IBM in regard to 100 percent export programme, it has to be as in the case of other export promotions where no such preferential account is built up. Foreign exchange earnings come in the country and become part of the reserves and import operations**



are undertaken based on the kind of product to be imported, their prices and implications for the local programmes”.

6.152. The Committee would like Government to ensure that in any transaction with multi-nationals and foreign companies in computers etc. care should be taken to prevent a net outflow of foreign exchange; that the import requirements for export manufacture are treated distinctly from those for the internal requirement of the country; and that a strict watch is kept on the quality, quantity and price of goods and their relationship to the requirements of the internal market and the price charged from the end user.

6.153. The Committee note that the ICL follow different conversion factors in the matter of transfer of machines and equipment from the parent foreign company to the Indian branch: the rate ranging, for some extraordinary reason, from £1=Rs. 8.3 to £1=Rs. 19.25. This must be a clever mechanism which must be fully probed by Government and action taken accordingly, so that all detriment to the country's interests can be avoided.

6.154. The only tenable excuse for the import of 'As Is' machines could be their suitability, at competitive cost, to the users at a particular stage of development. The facts as pointed out in Chapter III and earlier in the Committee's 127th Report on the use of computers for the Railways, indicate clearly that the hire charges were exorbitant and bore hardly any relationship to the nominal cost at which these 'As Is' machines were imported as " hulks " and refurbished after arrival. The only valid criterion for permitting such imports would be whether these had been made available at economic or reduced rates to the end-users. The answer to this query can be only in the negative. The Committee regret to find that Government never exerted itself through its various specialised and also knowledgeable agencies like the Departments of Electronics, Railways, Economic Affairs and Industries to examine the issue in an integrated manner and even to ensure that an organisation like IBM did not use the nascent market of India as a dumping ground for its outmoded machines by dint of high-pressure salesmanship. The Committee would like Government to at least learn a lesson from this harsh experience. Such package deals as have made it possible for IBM to dump in India what was largely junk, that is, machinery and gadgets which had hardly any market elsewhere in the world and yet to earn excessively high profits without making any substantial or significant contribution towards India's attainment of self-reliance in critical areas of computers, must no longer be tolerated in this country.

**6.155.** The Committee learn that the Electronics Commission had made a review of the activities of the IBM and ICL as far back as 1971 and had come to the conclusion that "as foreign controlled companies, the activities of IBM and ICL should be so re-oriented that they are concentrated either in heavily export-oriented production programme of both hardware and software and/or in domestic manufacturing activities involving production on the basis of advanced technology on fully contemporary computer equipment which fulfils genuine national needs." The Committee note that the matter has been sought to be followed up since by the Department of Electronics, the Department of Economic Affairs and the Reserve Bank. In a communication sent by the Reserve Bank to the IBM in November, 1975, it was stressed that:

- (i) The Indian branch of IBM shall be converted into an Indian company, with a non-resident interest in the equity capital not exceeding 40 per cent, within a period of 2(two) years from the date of receipt of permission under Section 29(2)(a) read with Section 29(2)(c) of the Act.
- (ii) The manufacturing activities of the company shall be for such capacity as is approved/recognised by the appropriate authority as on 31st December, 1973, subject to such additions or modifications as permitted upto that date by the press notes and notifications issued by the Government of India under the provisions of the Industries (Development & Regulation) Act, 1951.
- (iii) The branch shall not expand its business activities beyond the level existing on 31st December 1973 or undertake any new trading, commercial, industrial activity without the prior approval of the Reserve Bank. Such prior approval will not be required in respect of export of goods manufactured by the branch.
- (iv) IBM will submit to Government of India/Reserve Bank of India, within a period of 3 months from the date of receipt of the Bank's approval under Section 29(2)(a) of the Act, proposals relating to the taking over of the assets and liabilities of the Indian Branch of IBM by the new Indian company to be floated for the taking over of the business of the branch, along with an application for issue of shares by the new company.

**6.156.** The Committee understand that the position has not yet crystallised as the matter is still under discussion between IBM and

the various Government departments concerned. The Committee, are however, positive that the provisions of the Foreign Exchange Regulation Act and the guidelines and directives issued thereunder should be strictly enforced and the spirit underlying this basic national legislation must not be foiled. With the growth of our computer industry and the measures now happily being taken to develop mini and midi computers, and the setting up of the Computer Maintenance Corporation, it should be possible for us to be self-reliant except for too highly sophisticated areas requiring large-sized computers. There can, thus, be no reason to truckle down to the truculent postures of such formidable foreign firms like IBM. These observations apply mutatis mutandis to ICL and its associate ICIM.

6.157. The Committee feel happy and fortified in their view, as they note the statement made before them by the spokesmen of the Electronics Department that "in case IBM decide that they would not really fall in line with the policies of the Government of India and if they decide to leave the country, we should not be in any difficulty at all". He had added that "the Technological options that we see for this country—the manner in which computer industry should develop in this country are decidedly not in line with the technology policies of IBM".

6.158. It is seen that the exports made by IBM consist mostly of unit record machines and punch card systems, both of which are fast becoming obsolescent in the context of rapidly developing technology. India has an abundance of skilled manpower, and if IBM really meant to assist in the technological or industrial growth of this country, they could have had a more meaningful programme for manufacture. They have made no effort, either to sub-contract their export requirements to indigenous units, help them with technology and know-how and to secure a meaningful participation in export effort. Assistance from such quarters as IBM cannot, however, be expected for such tasks as the development of a research and development programme which would truly facilitate the attainment of self-reliance and the upgrading of our technology to an internationally competitive status.

6.159. The Committee would insist that whatever proposals are put forward by IBM or ICL in compliance with the directives issued by Government or the Reserve Bank of India in pursuance of the Foreign Exchange Regulation Act, these would be scrutinised minutely by our own experts well-versed in electronics, costing etc. So as to make sure that IBM, ICL and other foreign companies are not permitted to circumvent the country's laws and that their role,

if any, is permissible, should be strictly limited to export plus high technology programmes subserving the national interest.

6.160. The Committee attach great importance to this matter and would like to be informed as soon as some tangible decisions have been taken about IBM, ICL and other foreign companies in the field of computer industry. They would like to be satisfied that the decisions conform to the criteria hereinbefore indicated.

6.161. In their 127th Report (5th Lok Sabha) on the Railways, the Committee had pointed out that there was serious difference in the prices shown by IBM for customs in import documents and those claimed by them from Railway administration. The Committee called for information about the purchase price paid by Government Departments on items imported by IBM and ICL and the actual value of these articles declared to customs at the time of importation by the suppliers. They regret to observe that the Central Board of Excise and Customs have not been able to furnish the information to the Committee. Certain excuses for this failure have been conveyed to the Committee, but they are by no means satisfactory. In view of the apparently huge margin between the cost as shown in declarations to the Customs authorities and the cost as charged from users including Government Departments it is strange that Government could not collect the relevant information required by the Committee. On their own admission, the Central Board of Excise and Customs had been aware of the fact that "the IBM having relationship with their foreign associates were in a better position to import such "As Is" machines by under-invoicing them and charge high margin of profit by selling those machines in India." In spite of it, unfortunately, the customs authorities had not stirred themselves to action in earlier years. If the differentials between the prices charged to the users and the prices shown in the customs document by IBM, as in the case of Railways is any indication, IBM must have defrauded our customs revenue on a huge scale.

6.162. A summary recapitulation will give some idea of this defrauding process. From 1 May 1962 to 25 August 1973 imports made by IBM had to be assessed to customs duty on the basis of Inter-Company Billing Prices plus 73 per cent and the actuals of the freight, insurance and other charges. From 25 August, 1973 it was found necessary to increase the loading to 350 per cent in respect of capital goods machinery and equipment etc. imported by IBM and for data processing equipment loading was decided on case to case basis. The position being disconcerting, the Committee wanted to know the exact position and the rationale of this imposition which

was no doubt necessary to foil IBM's sharp practice. The Committee regret that things appear to be done in Customs on an ad hoc basis and there is no consistent principle behind assessment of customs duty on the imports of "AS IS" machines. Between 1956 to 1962 the customs duty was related to the rentals charged by the Company. Later on, certain other additions were made on account of the value of remittances made by the Company of their foreign profits and it was fixed at 73 per cent. After a subsequent review the Department came to the conclusion that higher custom duty should be charged but a final decision was taken only in December 1974 that is perhaps after the Committee's Report on the Railways was presented to Parliament. Our Customs administration should be run on a more principled foundation and all efforts in that direction must be made forthwith.

6.163. The Committee disapprove of the casual manner in which this question of customs duty was dealt with by the Customs authorities, particularly, in the earlier years. It is more surprising that although Customs Rules permitted fixation of prices for assessment of customs duty on the basis of the domestic selling price in the country of origin, Government did not resort to this rule till presumably the Audit/Committee pointed out the apparent anomaly in the prices declared to the customs authorities and charged to the Railways etc.

6.164. The Committee find that while since August 1973 the value of capital goods imported by the IBM is being determined after loading the inter-company billing price by 350 per cent. in the case of data processing machines etc., the loading would be varied from machine to machine, depending upon what the price of that machine is in the country of export less 25 per cent, adding to it, insurance and freight. IBM has questioned the very basis of the order of loading of Inter-company prices by 350 per cent and gone up in appeal to the Appellate Collector. The Committee are informed that a settlement was reached with the company that pending judgement by the Appellate authority the customs duty would continue to be collected on the existing basis and that the company would pay the difference retrospectively if the decision went against it. The Committee have also been informed that a guarantee and bond have been taken from the company to this effect. Keeping in view the huge amounts involved and the importance of resolving uncertainty in the matter, the decision by the appellate authority should be expedited. Meanwhile, the Committee suggest that the form and amount involved in the bond and the guarantee given by the IBM should be examin-

ed by the experts in the line in order to make sure of its adequacy and enforceability.

6.165. The Committee are surprised that the question of similarly loading the invoices of the other multi-nationals like ICL and ICIM for the import of machinery and data processing equipment has not been finalised so far. The Committee stress that this should be done without delay.

6.166. The Committee regret to note that it has not been possible for the Central Board of Excise and Customs to furnish to them details of the total customs duty realised on all imports by IBM and the total drawback paid to them during each of the last 6 years on the ground that the statistics in the Customs House are not maintained importer or exporter-wise but on the basis of commodity description. The Committee do not consider this to be a satisfactory explanation because there are not many importers of data processing equipment. Even with commodity-wise figures it should have been possible for the Customs authorities to furnish with some effort information about the drawbacks paid to the IBM because according to the Customs authorities themselves, IBM exported only 2 types of machines, namely, 029 and 129.

6.167. The Committee are also unhappy about the manner of payment of drawback to these firms. Procedure regarding the determination of drawback amount envisaged verification of the fact that the customs duty had been paid on certain components which went into the manufacturing process. The Customs authorities claimed that they were doing this verification. But Audit had questioned this claim on the ground that once the component is put in a machine it is difficult to identify. The field officers of the Audit Party had themselves tried to identify the components going into the manufacture, but they were unable to do so. As a result the customs authorities had resorted to a cut of 30 per cent of the drawback claimed, as a rule of thumb. The Board of Excise and Customs had themselves admitted that as a result of the intervention of Audit they had to re-examine the rate of drawback admissible to the IBM and as a result Rs. 33,32,560 which was sanctioned, has since been withheld. This goes to prove that the earlier claim of the Customs Department that only due amount was being paid to the IBM as drawback was not correct. In the absence of physical verification of the duty paid components going into manufacture, it was learnt that the Customs authorities were depending on the certificate of the exporter which was admissible under Rule 11 of the Customs Rules. The Committee feel that the amount of Rs. 33.32 lakhs due from IBM on the ground

of excess payment of drawback is not a small amount and Government should review thoroughly the entire basis and the modalities followed in determining and paying drawback so as to recover the over-payments made to both IBM and ICL on this account.

6.168. An interesting facet of this problem which came to the notice of the Committee was that IBM was allowed to import certain items on payment of import duty and certain others under bond. Only recently IBM had been given option either to use wholly duty-paid components or bonded components in their manufacturing process. Since the items imported on payment of duty as well as those imported on bond are likely to be used in the same machine, the Committee feel that the Customs authorities should segregate them and ensure that the duty is correctly levied and paid and drawback is also correctly given.

6.169. IBM hires its machines to customers on the basis of one time installation charges. It has been clarified by the Board of Excise and Customs that for purposes of levy of excise duty they evaluated the various types of computers and Data processing machines on the basis of list price of such machines plus "one-time installation charges". The Excise authorities also loaded the prices declared by IBM by 73 per cent on the analogy of customs. But this has been appealed against by IBM. The Committee feel that the determination of the value of the products of the company should be carefully re-examined by Government so that the correct value for levy of excise duty is determined and the excise duty legitimately due is realised.

6.170. In view of the fact that in respect of "AS IS" programme the contribution of IBM is only to refurbish the obsolete machines imported by them from abroad, it is a moot point whether this should be treated as a 'manufacturing' activity for purposes of claiming tax-credit certificate and other benefits under the Income-tax Act. The Department of Electronics were prepared to treat "AS IS" as an assembly programme. The Department of Electronics, as pointed out earlier in this Report, had cast doubt about calling them as "genuine manufacturing activity". Another wing of the Government, viz., the Income-tax Department, had also questioned this definition and had informed the Committee that 'the entire issue whether the company's activities in India can be treated strictly as "manufacturing" will be examined in detail during the course of the re-assessment proceedings for the year 1967-68 onwards'. In view of the varying opinions expressed on the subject and the revenue implications involved the Committee feel that Government should immediately determine the correct description of the activities of these multi-nationals which

will also enable a proper perception of their role from the social angle.

6.171. The picture that emerges about the performance of IBM on the Income-tax front is also very discouraging. The Committee had asked whether any default under the Income-tax Act, viz., in the filing of returns, payment of advance tax, deduction of tax at source and perquisites given to officers and employees etc., had come to notice in respect of the company. The Ministry replied that no default on the part of the company in respect of filing of returns, payment of advance tax etc., "has come to the notice of the Department so far." This almost sounds an evasive answer, and the Committee would require specifically the details for all the years for which IBM filed the returns, the dates on which such returns were received, the date of payment of advance tax, the total tax deducted at source and paid to Government's account. That the Department has been lax in his case is evident from the fact that the payments made by the Government Departments and other agencies were not subjected to deduction of tax at source under section 195 of the Income-tax Act till 1970. Even after March 1970, the company had managed to get a certificate under Section 195(3) from the Income Tax Officer and it has not been vouchsafed to the Committee, whether they had fulfilled all the conditions mentioned in Rule 29(b) of the Income-tax Rules.

6.172. As regards the recognition of the assessee as a company, there are many areas of darkness on which in spite of the best efforts of the Committee light has not been thrown by the Board. It was stated that the IBM World Trade Corporation was recognised as a company under sub-section (6) of Section 2 of Income-tax Act, 1922. The file in which this recognition was issued in 1953 was stated to be missing. Then when the question of assessment came, the IBM World Trade Corporation submitted only its branch account's results for Income-tax purposes and the department's representatives admitted that IBM World Trade Corporation's books were not called for scrutiny. To a question whether they were in possession of the Company's World Balance Sheet, the reply was in the affirmative. If so, it is intriguing how the proper allocation of expenses were not made and it was left to the assessee to come forward with a "Voluntary" disclosure of head office expenses which were claimed and allowed, in spite of their being excessive and suspect. It is obvious that the Income-tax department has been adopting an attitude almost of throwing up its hands while dealing with IBM World Corporation, possibly under the impression that they could not call for information regarding the total global activity of such foreign companies.



To a question whether Rule 10 of the Income-tax rules applied in this case, the witness replied that since the Branch balance sheet was available it was not necessary to resort to Rule 10. This is, to put it mildly, following the line of least resistance. The Committee are not satisfied with the Ministry's reply. The Income-tax Department was not even apparently aware of the fact that IBM World Trade Corporation which had obtained recognition as a company had split into two subsidiary Corporations, viz., IBM World Trade America/Far East Corporation and IBM World Trade Europe Middle East Africa Corporation. To a question about this division the Department's reply is as follows:

"As the parent company i.e., IBM World Trade continues as such, without any change in name or form, the question of fresh recognition of the Branch of the company does not arise."

6.173. It is not clear from this reply whether the Indian activity alone remained with IBM World Trade Corporation and not transferred to the Far Eastern subsidiary. However the Committee find from the Company's Annual Report of 1974 that the Indian Branch as managed by the Far Eastern subsidiary. It is therefore surprising that the Ministry should say that the original certificate issued far back in 1953 to the IBM World Trade Corporation would continue to apply to the branch.

6.174. It is on record that substantial additions had to be made by the Income-tax authorities in the returns submitted by IBM during the years 1967-68 to 1973-74. The major addition was on account of excessive development rebates claimed by the company which were not allowed by the Income Tax Officer. The Committee however note that relief was subsequently granted by the Appellate Assistant Commissioner. The Tribunal also did not uphold the Government's stand. However, the Department has filed an application before the Bombay High Court. The Committee urge Government to pursue the matter before the court conclusively. Besides the development rebate, there were certain other additions made by the Income-tax Officer which were acquiesced in by the assesses. The Committee would like Government to examine whether these additions attract the provisions relating to concealment and if so the necessary penalties should be imposed and recovered.

6.175. The Committee also find a serious lacuna in the Income-tax law viz., section 33(1)(a). According to the Board of Direct Taxes development rebate was permissible on second hand machinery under certain circumstances namely that such machinery or

plant was not used in India at any time previous to the date of such installation. No wonder IBM had claimed development rebate on the "AS IS" machineries imported by them. It has been admitted by the Department of Electronics that all that was done to these "AS IS" machines was "to assemble them". Therefore, to regard this activity as manufacture and to allow Development Rebate on machines given even on rentals is something which appears to be not in consonance with the objectives underlying this rebate.

6.176. The Committee are unable to appreciate the technical stand taken by the Income-tax Department in the matter of allowing the depreciation for calculation of taxable income. It is common knowledge that a large number of machines having no book value are in circulation and are earning exorbitant rentals for IBM and ICL. The Income-tax authorities, however, stood by the letter of the law and merely followed the criteria of "original cost of any plant or cost at the time of installation and calculated the depreciation according to the prescribed rates" without following any independent check with reference to the entries in the books of the company. It is common knowledge that IBM recovered depreciation on its machines hired out on a 4 years life basis but actually the machines last much longer. But the Income-tax authorities again seem to take a very legalistic stand adopting a certain prescribed formula "irrespective of the amount of the depreciation charged in the books of the company". Since the life of the machines is admittedly much longer than the four-year period taken by IBM it is evident that the company may have been making excess claim on the ground of depreciation in order to reduce their taxable profits. The Committee would urge Government to go into the matter in all its aspects and re-examine the cases where excess depreciation might have been allowed. Suitable instructions should also be issued to provide clear guidelines to the field officers.

6.177. According to information furnished to the Committee, IBM had so far remitted over Rs. 3 crores by way of profits during the period 1961 to 1971. The representative of the Department of Economic Affairs had during the course of his evidence before the Committee admitted that Government were all along aware of the fact that there was need to do something regarding repatriation of profits, but Government did not want to impose restrictions on remittances of profits and had instead adopted the course of requiring foreign companies to reduce their equity holdings to 40 per cent. The Committee note that Government have been keeping under review the question of large remittances of profits by foreign companies and multi-nationals. The Committee stress that

every effort should be made to see that this largely avoidable strain on our foreign exchange position is minimised by a truly meaningful stream-lining of the entire issue.

6.178. The Committee note that IBM had been given provisional tax credit certificates for Rs. 34.74 lakhs under Section 280(3)(b) for manufacturing items included in the first schedule of the Industries Development and Regulation Act. But it is astonishing that in giving such certificates the income arising from rentals was also taken into consideration. The Committee are glad that the assessments for the years 1967-68 to 1970-71 for which tax credit certificates have been previously given are now going to be re-opened and the correct amount of certificate admissible would be finally determined during the course of the re-assessment proceedings. The Committee, however, feel that this was a serious lapse and the circumstances in which such certificate was given in respect of income arising from rentals should be investigated and responsibility fixed.

6.179. Like the repatriation of profits and the head office expenses the Committee find that Rs. 4.98 lakhs were allowed to be repatriated on account also of development rebate reserve. The reason given by the Income-tax Department is that they do not "allow the assessee to use the provision for development rebate for a period of 8 years. They have to get it either for capital expenditure or some other approved expenditure. After that they are allowed to take it as a part of profit and they can declare dividend out of it". The Committee are inclined, however, to agree with Audit that the philosophy behind development rebate was to give incentive to develop industries in India. That could be done by utilising the reserve for the intended approved objective. But the reserve had to be kept in tact and not frittered away by way of dividends or repatriation abroad after 8 years. The Committee urge that the matter should be re-examined so as to preserve funds created out of the development rebate for development within the country.

6.180. The Committee are surprised that in spite of the fact that IBM is a giant world company, the return of income for several successive years from 1964-65 to 1973-74 were assessed by an officer only of the rank of Income-tax Officer. The Committee in their 186th Report on Corporation Tax and Income Tax—A Review have reiterated that initial assessment of large companies should be made centrally by experienced senior officers of the department not lower in rank than an Assistant Commissioner so that all aspects having bearing on taxes are gone into. The Committee

would like the Ministry to investigate how the assessment of IBM for all these years were being done by only an Income-tax Officer and not by a senior officer as per the principle stressed several times by the Committee and accepted by Government. Government should inform the Committee of the action taken and fix responsibility in the matter. Government should also review this matter in respect of other powerful companies, particularly the multi-nationals, to make sure that their income is meticulously assessed initially by senior officers not lower in rank than an Assistant Commissioner.

6.181. There is more than enough evidence that the multi-nationals in the field of computers and data processing equipment, such as IBM with its near-monopoly position in India, have defrauded the country of enormous revenues by resorting to various unfair practices like transfer pricing under the garb of inter-company billing system, misuse of import entitlements, exaggerated claims of drawback, under-payment of excise duty, exaggerated claims of depreciation, development rebate, head office expenses etc. All these practices have enabled them to reap high profits at the cost of the exchequer as well as the technological development of the country.

6.182. The Inter-ministerial Working Group which was appointed on the suggestion made by the Comptroller and Auditor General of India that Government should go into the cost and the rates of return on which IBM had determined the high rates of prices for their machines, had come to the conclusion that there is prima facie case for reduction in rates charged by IBM and ICL to the extent of 25 per cent to 30 per cent. The Inter-ministerial Working Group had also recommended that the Department of Electronics might discuss with IBM and ICL regarding further steps to reduce the prices with effect from January 1969. The Committee are not aware of the results, if any, of these negotiations. Information in this matter should without delay be made available.

6.183. The Committee are confident that if the powers available to the Government under the Foreign Exchange Regulation Act are used with prudence and determination, it should be possible to ensure that the foreign companies, including multinationals which are allowed to function in the country, conform strictly to the laws of the land and serve the objectives of development and are in any case sternly prevented from indulging in impermissible activities. The Committee expect that Government will soon be in a position truly to claim that such foreign operators have been curbed and shown their place in a self-respecting country like ours.

## CHAPTER VII

### THE INDIGENOUS COMPUTER INDUSTRY

#### Survey of the existing infrastructure

7.1. The present indigenous production of Computers in India is very limited. Currently, the only indigenous computer manufacturing programme in the country is that of the Electronics Corporation of India Ltd., Hyderabad (a wholly Central Government owned public sector undertaking). ECIL are presently manufacturing computers in the mini and small range (TDC-12 and 312). Development work is also stated to be in progress on a medium scale computer system (TDC-332) and this is likely to be productionised in about 3 to 4 years' time.

7.2. The International Computers Indian Manufacture Ltd. have been awarded an industrial licence to manufacture 48 systems of the 1901 series in collaboration with Bharat Electronics Ltd., Bangalore. In this joint venture the role of BEL is purely that of a sub-contractor and they have no responsibilities for marketing the system. The indigenous effort of BEL is the fabrication of printed circuit cards, backpanel wiring mainframe assembly and final testing.

7.3. Another foreign company viz. IBM in their factory at Kurla, Boma, manufacture unit record machines and key punches. They were also engaged in reconditioning and assembling 1401 central processors. No indigenous industry is manufacturing items exported by IBM from India. However, a number of indigenous industries have been sub-contracted by IBM to manufacture parts, assemblies and sub-assemblies for the equipment and spares etc., exported by IBM. Manufacture of these parts, assemblies and sub-assemblies is according to design specifications etc. provided by IBM.

#### Electronics Corporation of India

7.4. The Computer manufacturing programme in ECIL began in the latter part of June, 1969. In regard to the systems developed and produced at ECIL it has been stated that:

“The first system manufactured was the 12-bit discrete machine TDC-12 developed in Bhabha Atomic Research

Centre which was successfully productionised by ECIL with necessary design modifications and rigorous production engineering, so that it could be marketed. 22 systems using the TDC-12 as the Central Processor Unit have been produced and installed and are now in operation at various places in the Country.

ECIL made the transition from second generation (discrete semi-conductor types) technology to the more advanced third general IC technology in the year 1974. All current design and manufacturing at ECIL uses this advanced technology. News systems introduced on this basis are the TDC-312 machine and the TDC-316 machine.

17 systems using TDC-312 have already been put in the field for a variety of scientific applications at various universities, laboratories and industries. The TDC-312 has advanced features like byte processing and decimal arithmetic and has been designed as the work-horse machine around which a wide range of applications can be built up. It is this machine which has been used in the EDP systems that ECIL is now marketing. It may be pointed out that all applications using IBM-1401 and its derivatives which are now in use at many places in the country including railways can be met by the TDC-312 system. ECIL expects that by the end of the year 1975-76 the number of TDC-312 systems installed would rise to 35 of which one third would be for EDP applications.

The TDC-316 machine which has also been developed at ECIL is larger than and represents an advancement over the TDC-312 machine in terms of operational power and is intended for applications of a specialised kind. The system has already been used in ADGES project and will meet many of the requirements of defence, space and the atomic energy programmes in the country. The TDC-316 is also capable of being used as an EDP system with appropriate peripherals. Already 13 systems built up around the TDC-316 are in the field and the figure is expected to rise to 35 by the end of this year."

7.5. As to the projects being developed at ECIL it has been stated that:

"Development is on hand at ECIL of TDC-332 which is in the large computer class. It has a large word length, a faster

cycle time and extensive memory capacity and uses third/ fourth (large scale integration) generation technology. The TDC-332 can be used for all applications which are met by the IBM 370/145 and 155 machines, with all modern features such as time sharing and multi-programming capability and is available for large scientific and business applications. The scientific configuration of the machine will match the performance of CDC 3600, an American machine, which has been operating in TIFR for over 10 years.

In addition to digital computers as above, ECIL also manufactures an analog computer AC-20 of high accuracy. Hybrid systems using the digital computer TDC-312 and Analog Computer AC-20 are being developed for meeting certain scientific applications."

7.6. The software for computers produced in ECIL is also being developed side by side. In a note on the subject, the Electronics Corporation of India have stated:

"ECIL has a very strong base for developing computer software and all its machines in the field enjoy software support which brings to the user the advantage of the latest developments. The software design capability at ECIL is supplemented by the development work at TIFR, Bombay; Indian Institute of Management, Ahmedabad; Indian Institute of Technology, Kanpur; Indian Institute of Science, Bangalore and Administrative Staff College of India, Hyderabad with all of whom ECIL has software development contracts. It can be stated that the country has got excellent software development ability which can handle all requirements of the nation."

7.7. The Secretary, Department of Electronics informed the Committee during evidence that:

"What ECIL does today is, to import the peripherals, many of the ICS, and the memory cores. What they are doing is systems engineering-putting together the various items. With many of their own items they are now making printed boards or multilayer boards, which they did not make a few years ago; they have gone over from transistors to IC computers, they are developing software application packages, but still they depend significantly on imports of those items which finally make the equipment."

7.8. On being asked whether the manufacturing operations on ECIL only amounted to assembling of imported parts, the Secretary, Deptt. of Electronics stated:

“It goes beyond simple assembly for the following reasons. They are indigenising appreciably. Today they are making all the boards on which these components are monitored. It is quite a complex technology: they make multi-layer printed card boards. They are indigenising many of the semi-conductor components which go into it. But much more than that, this whole thing has got a certain design philosophy, it has got a language, it has got to have software packages for using them in various applications. ECIL is developing all these. But what we want to ensure is that, even those imports such as core memory and the digital semi-conductor components which go into it like ICs and memories must be made in India. That is what we are really aiming for. apart from the peripherals which I have mentioned.”

7.9. In a note on the plans of the ECIL for complete indigenisation of computer manufacture, the Electronics Corporation of India have stated:

“It is the objective of ECIL to market a totally indigenous system, indigenous in design, assembly and materials. So far as design capability and assembly is concerned it may be stated that complete indigenisation already exists at ECIL, and keeps pace with all new developments. It is only in the field of materials and components used in the manufacture of computers that there is dependence on imports.

In so far as raw materials for the fabrication of PC Boards is concerned indigenous availability of the required quality of double sided glass epoxy boards is steadily increasing and we expect that shortly there will be no more dependence on imports for this basic item. There are many connectors used in the computers, some of which are now being imported and which are of special design and shape. Efforts have been made progressively to achieve production indigenisation in this area, with coming into existence of promising entrepreneurs. ECIL foresees no major problem for indigenisation as far as connectors are concerned. Another basic requirement of computer manufacturing, namely, ICs is also gradually



being indigenised with the development at BEL of some of the commonly used types of ICs. In addition ECIL and some other institutions in the country are also conducting research work for development of new ICs and proprietary ICs. There is good coordination between ECIL and BEL in the development and application of computer ICs, ECIL performing the required reliability tests. It may, therefore, be said that IC indigenisation is also well under way.

The large cost of any computer system is constituted by the peripherals which are used for input and output of information to and from the computer. As far as peripherals are concerned the country still has to make considerable leeway in indigenisation. Development work is being carried out at ECIL, BEL and HTL. The major challenge here is the great mechanical engineering complexity of the peripherals and the special alloys or other materials used in the manufacture of the peripherals. The cost of peripherals is high because of the sophisticated electro-mechanical devices involved as also because of expensive tooling required to make the various parts. Therefore, unless offtake is high, it is not an attractive proposition for any industry to take up manufacture of peripherals. This activity will pick up only when enough demand is generated for large volume production of computers and hence peripherals. No reasonably short deadline can be given for completing indigenisation of peripherals, but it is very likely that within a decade the import content of the indigenous computer will have been brought down to a negligible fraction."

#### **Bharat Electronics Limited, Bangalore**

7.10. It has been stated that BEL has, during the recent few years, built up a considerable competence and expertise in the Computer and Computer Peripheral area, both with regard to indigenous design and development activities as well as production activity.

7.11. It has been further stated that BEL is presently manufacturing the ICL 1901 A (of International Computers Ltd., UK) Computers System ((Electronics portion) under the terms of an Agreement with the International Computers Indian Manufacturing Company Limited (ICIM) which is an ICL associated company. The Government of India has so far licensed ICL the production of 32 Nos of

the 1901 systems. BEL has manufactured and supplied 27 Nos and would be making the balance of 5 Nos. during the course of another year. The BEL's manufacture in the system relates to the electronics portion, while the peripheral equipment are licenced for production by the ICIM.

7.12. Apart from manufacture by BEL of the ICL systems, BEL is stated to be engaged in considerable design and development activities both for mini-computers as well as for computer peripheral equipment. BEL has received an order from the Electronics Commission for certain numbers of ruggedised mini-computers in the interest of the security. BEL is also engaged in the development of the following types of computer peripherals

- (a) Paper Tape Reader
- (b) Paper Tape Punch
- (c) Send/Receive Typewriter
- (d) Visual Display Unit
- (e) Magnetic Tape Unit
- (f) Cassette Tape System
- (g) Line Printer
- (h) Card Reader

The Department of Electronics have stated:

"The Department has also given design and development grants to BEL, through the Technology Development Council, for the design and development of more sophisticated peripherals like card Reader, Line Printers and Magnetic Tape Transporters. These development activities will be followed up by the Department to ensure the setting up of production facilities for these products on a commercial basis."

#### **Projections of the demand for computers and other data processing equipment**

7.13. The Committee enquired whether any estimate of the requirements of computers of different categories (large, medium and small including mini-computers) for various sectors of usage had been made and desired to know what was the total requirement of computers in the country during the Fifth and Sixth Plan period. In a note, the Department of Electronics have stated:

"An estimate of the requirements of computers by categories (large, medium, small including Mini-computers) for

various sectors of usage during the Fifth Five Year Plan has been made by the Working Group on Computers, Controls and Industrial Electronics of the Task Force on Electronics and Communications of the Planning Commission. A summary of the total requirement of computers of various categories is given below:—

	1975-76	1976-77	1977-78	1978-79
Large (more than Rs. 50 lakhs)	3	3	3	3
Medium System (Rs. 10 to 50 lakhs)	39	48	56	65
Small & Mini Computers (less than Rs. 10 lakhs)	120	160	230	290

A estimate of the requirements of peripherals during the Five Year Plan period for the medium and mini-computer programme is as follows:—

Teleprinters	1700
Paper Tape Readers	750
Line Printer 300 LPM	450
Paper Tape Punch	750
Line Printer 600 LPM	350
Card Readers 300 CP	270
Low Speed Magnetic Tape	1050
High Speed Magnetic Tape	350
Disc. drivers	750"

7.14. In regard to the projections for the Sixth Plan, the Department of Electronics have stated:

"No detailed estimates have, however, been made for the Sixth Five Year Plan period. However, assuming growth rates of 20, 12, 18, 17 and 16 per cent of computer requirements during the respective years of the Sixth Plan, the total production in the field of computers and calculators is expected to rise by 2½ times that of Fifth Plan (to a total production estimated at Rs. 445 crores during the period)."

7.15. While assessing the demand potentials of the computers in the country, the Electronics Corporation of India have, in a note stated:

“The demand potential for computers in the country could be even larger if serious use of computers is contemplated as an aid to speedy decision-making, efficient operation, and optimum utilisation of heavy capital investments in plant and machinery. However, taking into account the somewhat limited current awareness of how well the computer can be used for development and the constraints on expanding this awareness, ECIL has estimated that the demand for computers in the small and the medium class during the period 1974-79 will be about 650 installations, falling into the following categories of applications:

1. Data processing systems	. . . . .	400
2. Scientific systems	. . . . .	150
3. Realtime systems	. . . . .	100
Total	. . . . .	<u>650</u>

This figure can be taken as a lower limit for the total plan period demand. As far as large installations are concerned, a conservative estimate is 15.”

### Manufacturing Programme

7.16. Referring to the projections made by the Department of Electronics in regard to the requirements of the computers of different categories, the Committee pointed out that the only indigenous computer manufacture programme was that of ECIL at Hyderabad. Asked as to what was the future programme for creating the necessary infrastructure within the country to meet the total requirements of computers and data processing equipment, the Secretary, Department of Electronics stated:

“As far as future is concerned, our approach is essentially the following:

First of all, I think, we will have to have production of computers in India because the numbers for the important sectors where the use of computers is fully justified is already large enough to justify production in

the country. That is why we have fully supported the production programme of computers at ECIL which is a hundred per cent Central Public Sector Undertaking. They are producing computers. About 60 computers produced by ECIL have already been installed at various points in the country.

Secondly, we also recognise that large computer systems, that is, computer systems which are required in limited numbers which have very large memories, very high speeds and many other capabilities built into them will not be made in the country for quite some time to come and will have to be imported. The reason for this is that the investment on making them indigenously will not really be justified in terms of the numbers we need. These, in any case, would be controlled in terms of import user by user, (their objectives, the configuration to meet this and where from they have to be got etc.). These large computer systems are of the type for example like the computer system recently installed at the Tata Institute of Fundamental Research. That, of course, was installed by U.N.D.P. That is a very large DEC computer system 1077. It is one of the largest computer system installed in India. It has many sophisticated features. It is meant essentially for scientific purposes, for development of new types of software, for making use of our capabilities of producing mini and small computers so that we can tie up many small computers to be equivalent to a large computer system, for certain purposes—not for all purposes—what is called network project. There are computers whose imports we have allowed.

There are two French computers: one which is given to ECIL because they are going to use it for further systems engineering and software development; the Department of Space requires a large computer system which we have approved of; it is for their programme relating to satellite launched vehicles, satellite development, and so on. Similarly we have cleared imports for defence purposes and so on. But these are individual cases of large computer systems but required in limited numbers where it could not be worthwhile making them in the country at the present moment, until we have built up the whole base. We want first to deal with the higher priority areas where the numbers are large, where we can proceed from our own

capabilities; both in money and manpower and can fulfil the need."

7.17. The Committee desired to know what were the present capabilities of the indigenous industry *vis-a-vis* the projected demand for computers and data processing equipment. The Secretary, Department of Electronics stated during evidence:

"I would broadly divide the computer area to illustrate the point, right from the basic pocket calculator through the mini-computer, through what we call the mini-computer and through to the large maxi-computer system.

Our effort is to extend our capability to the entire spectrum of computer manufacture other than the maxi-computers. Other than the very large computer systems, we want to establish capability for production in the country the entire range of desk calculators, mini-computers and the medium sized computers. This is our planned effort.

With regard to mini-computers, the point really is this. It is entirely based on putting various entities together. I should, therefore, explain the structure of a computer. First of all, you have the processor unit and then you have the whole range of peripherals. Peripherals are the means whereby you can put in data, (anything you want) as input; and can get what you want as output after computing. Our effort, if it was restricted to just making the computer system, the total system, will mean that we will have to continue to import all the basic entities, which are the components and the peripherals which go to make the computer system. That is not enough. So we have gone a long way in the sense of providing technology development, funds, and contacts to various places in identifying potential production agencies and also identifying the numbers required of these basic entities—what I mean by this is 'peripherals' for example, paper tape readers, paper tape punches, card readers, line printers, display devices and so on. There are some peripherals which we will not make because the numbers required are very small now. It is better to import rather than invest money and men in that area where it would not be worthwhile. Again we are going through the process of establishing production facilities for memory

systems, for the integrated circuit, for multi-layer printed card boards and so on. What I want to say is this. The computer is something which you see as a final piece of equipment. It is built up of a large number of components, sub-assemblies and individual pieces of equipments. We, therefore, have to establish the base for making all these. Once we make them, then you can marry these things together in any form you like to make a configuration which is suitable for a particular application. Once you have the capability for making the large scale integrated circuits, once you have the capability for the appropriate type of memory which now comes as a semi-conductor memory and various types of peripherals needed for a mini-computer anybody can put these together and then develop the particular application, whether it is for chemical industry or electrical engineering, etc. Therefore, what we are planning to do is to have an appreciable production of peripherals—by 'appreciable'. I mean more than 50 per cent of the types requirement in the country—by the end of the Plan period.

As far mini-computers are concerned the only place where they are made is ECIL—except for ICL computers which are made by sub-contracting the central processor to Bharat Electronics. There also they require various peripherals. What ECIL does today is, to import the peripherals, many of the ICs, and the memory cores. What they are doing is system engineering—putting together the various items. With many of their own items they are now making printed boards or multilayer boards which they did not make a few years ago, they have gone over from transistors IC computers; they are developing software application packages. But still they depend significantly on imports of those items which finally make the equipment. Therefore, to talk of a meaningful production base in the country, we have to make these ourselves. This is what we are planning. We will be setting up, apart from the semi conductor facilities that generally exist at the moment, a complex for production of large scale integrated circuits that are not made in the country, we are putting up a proposal to the Cabinet to set up the semi-conductor production corporation which will make these. This will take about three years to go into production. In many of the other areas also we are trying to get a production established

through Bharat Electronics, through Hindustan Teleprinters, and so on and so forth. To summarise, in about three years from now, we hope to have appreciable production for a bulk of the items, components, sub-assemblies and peripherals, which go to make a computer."

7.18. The Committee called for information about the indigenous manufacturing capacity for the manufacture of—

- (a) Hardware for computers
- (b) Peripheral equipment
- (c) Components
- (d) Software; and
- (e) Spares.

In a note, the Department of Electronics have stated :

"The manufacturing capacity as currently set up/approved are summarised below:

Hardware	Organisation	Capacity
(a) (i) CUP's (TDC 312,316)	E.C.I.L., Hyderabad.	50 systems per annum
(ii) 1901 A Computer System	I.C.I.M. Poona BEL	12 systems per annum
(iii) Mini-Computers	Digital Systems International Baroda.	20 (Limited Licence)
(iv) Micro-processors	SDM Associates, New Delhi	50 per annum
	Shri Harinder of Processor System Bangalore.	50 per annum
Peripherals	Organisation	Capacity
(b) (i) Mag Tapes	Applied Electro-Magnetics, New Delhi.	100 Nos.
(ii) Cartridge Disc Drive	SMS Associates, New Delhi.	2000 Nos. (90% export)
(iii) Non Impact Printer	Basu Johu, Madras	(50 Nos.)
(iv) Graphic Display	Do.	(10 Nos.)
(v) Card Reader	Do.	(50 Nos.)
(vi) Floppy Discs	Do.	(50 Nos.)
(vii) Cassette (Digital)	Applications under consideration	
(viii) C R T Display	Do.	



**(c) Components**

Components required in the Computer industry would largely fall under the category of progressional grade components both active (transistors, integrated circuits of various levels of integration i.e. Small Scale, Medium Scale and large scale etc.) and passive (such as precision resistors, capacitors, magnetic cores etc.) and other high performance components such as connectors, printed circuit boards etc. Indigenous manufacturing capacity in this area is being set up as part of the overall national plan for the development of the electronics industry. More specific to the area of computers, the Department of Electronics had taken the initiative in calling for entrepreneurs to set up a ferrite core stringing facility for memory planes and currently the setting up of such a facility with a potential for export is under consideration. The Semi-conductor Corporation the setting up of which has been recently approved in detail by the Electronics Commission and is to be placed soon before Cabinet will make a significant contribution towards building up our indigenous production capacity for the more contemporary semi-conductor memories, micro-processor units for mini-computers as also a variety of large scale integrated circuits.

**(d) *Softwear for Computer Applications***

The country has nearly 280 computers installations where personnel are engaged in development of software. The country is by and large self-reliant with regard to current software needs. The Department of Electronics has also taken the initiative in setting up the "National Centre for TIFR, Bombay which will develop software tools to support systems software development in the country. The proposed Regional Computer Centre at Calcutta and the National Informatics Centre at Delhi will also support development of software for planning and management information systems for industry and Government decision making. Building up a capacity for software export has been promoted by encouraging various organisations (Administrative Staff College of India, Hyderabad. Operation Research Group Baroda, Engineers India Ltd., New Delhi, Compatronics Ltd., Tata Consultancy Services, Bombay) to import computers on the basis of commitments for export of software to countries such as

Holland, USA, USSR, GDR, West Germany, Spain, Australia.

(e) *Spares*

Currently a considerable amount of spares for imported computers are also to be imported because these are mostly packaged in modules/printed circuit boards proprietary to the particular manufacturers. There is, however, considerable scope for indigenisation and cannibalisation of components on defective modules or printed circuit boards etc., for the computer system in use. The Computer Maintenance Corporation which has been set up as a public sector undertaking will build up skills in such indigenisation with regard to spares for imported systems.

7.19. In a note submitted to the Committee the Department of Electronics had stated that the present indigenous computer manufacturing programme was largely based on imported peripherals (input-output equipment) and components (such as semi-conductor devices, ferrite core memories etc.) The Committee desired to know when it will be possible to manufacture these components locally and what measures had so far been taken for the indigenous manufacture of these components. In a note, the Department of Electronics have stated:

“In a manufacturing process, specially on equipment which is capital intensive like computers and peripheral equipments, the quantities to be manufactured from a cardinal basis on which manufacturing decisions can be taken so as to make the indigenisation process cost-effective. In the case of computer peripherals, the indigenous requirements are such that the quantities for some of computer peripherals are not large-enough to make their manufacture in the country economically viable. Therefore, the Department of Electronics had decided that only those computer peripherals like teleprinters, paper tape reader, paper tape punches, slow-speed magnetic and disc drives should be taken up for manufacture for the time being. In this regard, some licences have already been given to various public sector undertakings and also to some private entrepreneurs. Till the quantities for indigenous manufacture are large enough, we would have to import fast speed peripherals for high speed printers, card

readers, magnetic and disc units so that adequate infrastructure is built up in the field of data processing. The setting up of the Semiconductor Research and Productions Corporation should make us self-reliant for a major part of components currently imported for use on computers.

7.20. The Committee desired to know whether any policy for achievement of self-reliance in the field of computers had been evolved and by what time self-reliance was likely to be achieved in this field. A note furnished by the Department of Electronics is reproduced in the Appendix XI.

7.21. A note furnished by the Department of Electronics on the R & D activities connected with computers is given in Appendix XII.

7.22. In relation to the use and production of large computers, the Secretary, Department of Electronics deposed during evidence:

“With regard to large computers, our policy is extremely clear. (1) We will not embark on a production programme as of today, for the simple reason that the investments in terms of both man-power and resources, would not be justified in terms of the numbers needed. (2) They will be available essentially in the form of facilities for large-scale, scientific, engineering and national types of work such as for Planning Commission and that sort of the activity, or for software exports. Therefore, large computer systems are going to come in either into locations such as national centres, or regional centres or in the form of special facilities for specific purposes such as defence space, atomic energy, software exports, etc. So I think our policy with regard to large maxi computers is very clear.

With regard to the other end of the spectrum, i.e. desk calculators, it is quite clear. It is a consumer item which could be used by the public. Just like the slide rule, it is an electronic slide rule and it can be used by anybody who wishes to buy it if he thinks it worthwhile. Coming to the spectrum between mini computers and medium sized computers, we have listed a set of areas which have national priority. This has been listed in our annual reports and in fact in the respective Report on Electronics”

7.23. The Committee enquired whether for our requirements of large computers we would be dependent on imports from IBM and such like multinationals. To this the Secretary, Department of Electronics replied:

"I can give you the answer straight away. First of all, we have ourselves been very much concerned about any situation in which the whole area of data processing in the country, where large computers or medium computers are involved, develops in such a way that all of them or a majority of them, come from any single company. We have had extensive discussions relating to all aspects involved. If a company provides the computer, it has links with that area in a variety of ways for maintenance, for up-dating and engineering improvements and all sorts of things, so that vast amounts of information flow back to the company which is a foreign one. We are fully aware of these implications. Secondly, in the past, within the framework of Government functioning, we did try to use the mandate given to Department of Electronics to ensure that the users had really to come to us because it is an import above Rs. 5 lakhs. We therefore asked for the objectives for which the computer was needed. We asked why a particular computer or a configuration was selected and tried to make sure of final selection on an objective basis, not related to any company, but to the objective for which the computer is needed, and the configuration needed. An analysis was made of all the computers in the world to meet the end objectives and the choice made of the optimal system for the purpose. Recently, the Cabinet have accepted this, but it has had to wait because of the transfer of this subject concerning computers in the Allocation of Business Rules from Department of Statistics to Department of Electronics. The Cabinet has now accepted the fact that all users, requiring imported computers, would put up their requirements to the Department of Electronics. The latter will then examine the configuration in relation to these requirements; and will then obtain tenders on a broad basis. Afterwards there will be a committee, which will be finally make a selection on which will be represented Department of Electronics, Department of Economic Affairs, and where necessary, the user element. Henceforth all computer imports will be channelised through the Department of Electronics. We will ensure that the country is not put in a position whereby any individual firm/company has a monopoly, whether IBM or any other company for that matter.

7.24. The Committee's attention was drawn to the Budget speech for the year 1976-77 made by the Finance Minister on the 15th March, 1976 in which it was *inter alia* proposed that the basic import duty on computers and computer sub-systems will be reduced from 60 per cent to 40 per cent *ad valorem*. He also proposed to exempt them from auxiliary and countervailing duty. This appeared to be in conflict with the declared policy of the Department of Electronics who wanted to move ahead in the direction of meeting the demand of computers by indigenously produced computers and who had decided to permit the import of computers from abroad only in exceptional cases and for indispensable reasons. The Committee asked for an explanation of the position, which however, has not so far been received.

7.25. A note on the need for an indigenous base for the manufacture, distribution, support and maintenance of computers, as furnished by the Electronics Commission, is reproduced in Appendix XIII.

### Mini Computers

7.26. The Committee were informed that the information, Planning and Analysis Group of the Electronic Commission had made an extensive analysis about the kind of computer technology which was relevant to the Indian conditions. The results of this analysis indicated that for a country like India, about 75 per cent of computer capacity requirements can be met through mini computers and mini computer networks and the remaining 25 per cent maxi computers. It was also estimated that it would take a number of years for the country to acquire competence for manufacturing maxi computers and associated peripherals, whereas it is within the capacity of the country to manufacture mini computers and associated peripherals.

7.27. In a note furnished to the Committee regarding the measures taken so far for the indigenous manufacture of computers etc., the Department of Electronics have stated:

“A panel on Mini-Computers set up by the Electronics Commission has recommended establishment of a mini-computer industry in the country, and also an active promotion of applications for introduction of mini-computers in various sectors relevant to national development. The total national demand of around 400 mini-computers by 1978-79 is expected to be met through indigenous production. The industry will be based on contemporary

technology and the know how provided indigenously through domestic design and development. The first set of applications for industrial licences received from entrepreneurs from the large, medium and small scale sectors are not being processed and the industry can be expected to be established rapidly. Because of their lower cost relative to standard size computers and the versatility of their capabilities mini-computers are expected to bring about wide spread adoption of modern computational techniques in important areas of national activity."

7.28. During evidence the Committee pointed out that the computer companies have, by induction of a large number of computers, which could be called business machines, laid down a foundation and the users have been accustomed to these systems. Therefore while considering indigenisation whether it was proposed to completely change the existing infrastructure and put up a new super structure based on the latest technology. The Secretary, Electronics Commission stated in this connection:

"The present position in which we are is that we have inherited a computer culture which has been built up by the marketing philosophies and values of multi-national companies. Whether in the scientific area, in the business area, the application of computers, has essentially been propelled by the Commercial drive of IBM ICL. They started by saying, we have certain computers, we have certain software, these are *a priori* relevant to you today; if they are not relevant to your needs, we will explain to you how they are relevant. Therefore, you donot start with your needs, but you start with what they are in a position to sell and essentially match these elements of what they can convince you to be your needs, with their system.

Now our approach which we have been trying to follow through a variety of mechanisms in last five years is to start at the other end of the system. What are the areas and types of use of computers which really are going to be a significant pay-offs to the development effort of the country taking into account this country's assets and then direct the application of computers to solving these priority problems.

However the practical aspect has also to be kept in view. We have injected some 250—260 machines into our country through market propulsion of which 180 are owned

by one company, on hire or lease. How does one remedy this situation.

Our broad approach would be the third alternative namely to change the foundation to modify the infrastructure and build on that modified page a super-structure which will respond to Indian needs and priorities and which will use Indian resources, particularly high-level manpower to the fullest extent.

7.29. In the same context, the Secretary, Department of Electronics stated during evidence:

"First of all there is a certain culture relating to what you referred to as very large computers or maxi-computers. Large computer systems have come in essentially into scientific and engineering environments. If you look at the large computers already existing in India, they are in places like Tata Institute of Fundamental Research, BARC, ECIL, Department of Space, Meteorological Department, Delhi University, IIT Kanpur, IIT Madras, and the IITS which are also equipped with the Soviet systems, like IIT Powai, Kharagpur. When I talk of the culture of these maxi-computers or large computers, they have essentially been made use of on the scientific, engineering, and educational scenes leading to research, development and design. That is the first answer.

There is a second type of culture which has existed for a long time and which has been bothering the PAC, that is 1401, unit record systems and similar IBM and ICL systems which have come into a large amount of business and equivalent governmental environments. This is what you have been discussing at some length.

The mini computer is a development of relatively recent origin; it is just a few years old, and the mini computer culture is something which has developed very rapidly all over the world. It come into existence because of a spectacular development in technology; this technology of Solid State Electronics.

You are all familiar with the transistor, the individual semiconductor element. Then one started to find that instead of taking a large number of transistors separately and wiring them, you could by solid state techniques have

them all on one chip, so that one is able to connect together something like 10,000 transistors or equivalent on a very small chip of silicon. It is this revolution in integration from ordinary single transistors would together to the small scale, medium scale large scale and very large integrated circuit, which has made possible the mini computers or the micro-processor. This has occurred over the last five years. A large number of people are beginning to understand and appreciate this new development and its impact in a variety of area, so much that a new culture is growing in India and we are getting requests continuously for clearance for mini computers, not for those purposes for which 1401 were used, but for the type of application which I regard as meaningful. For example, the ITI Factory at Palghat is getting a mini computer not for labour displacement or routine accounting, but they are getting it as a test computer to test a large number of printed circuits which they are producing for electronics exchanges. It is being used in what I regard as an appropriate industrial environment. In a sense, there is this mini computers culture which is growing appreciably in the case of people who already understand science and engineering, where these applications are very significant. That will have a tremendous impact in many areas such as industrial, defence and such applications."

7.30. On the question of productionising mini-computers the Secretary, Department of Electronics informed the Committee as under:

"I asked an independent panel to go into the whole area of mini computers and give me a report relating to the areas of application, the technologies, the costs, the viability in terms of numbers to be allocated to individual manufacturing groups and so on. There is a report from the panel. Secondly, I have already a large number of applications from various units in the country to make these. I have however, not been able to recommend the licensing of these, for the simple reason that in the absence of production of the basic elements, namely the large scale integrated circuits, semi-conductor memories, micro-processors chips and the peripherals in the country, giving licences would be tantamount to an assembly operation. These people would have to import all of these, put them together and deliver the main computer to the users. This would involve considerable foreign exchange outlay. On



account of the stringency in the foreign exchange position, particularly after 1973 because of the oil crisis etc. I decided that until we are completely clear in our programme for production of these basic items, that we could tell the Finance Ministry to release foreign exchange only for the next two years or so and afterwards we would be able to cut it down, it would not be advisable to grant licences. If year after year, they continue to import components, it would not be satisfactory. Since our production programmes are being made clear for all these sub-units, now we will be taking up licensing of units for mini computer production."

7.31. The Committee asked whether by the end of the Fifth Plan the country would be self-sufficient in so far as the production of mini computers was concerned. To this the witness replied:

"As I said, if we licence mini computer production, we would immediately have production of the machines. But it will only be an assembly operation, with of course, also application packages and so on for certain specific purposes. It will not be a meaningful operation in terms of foreign exchange outlay until we have a programme to make some of the basic elements. That is why we are taking decisions and hope to implement them in the course of the next few months. As soon as that is done, we will be able to say that when the mini computer production programme goes on stream, whilst it may be based initially—for the first one or two years—on imported items, from then on the production of local items will enable it to become increasingly indigenus. This is what we are really planning for."

### **Software Development**

7.32. In regard to development of software in India, the Department of Electronics have, in a note stated:

"A number of entrepreneurial groups are engaged in systems and software development on a contractual basis for various user organisations in Bombay, Poona, Bhopal, Baroda, Calcutta, Delhi, Hyderabad, Madras, Tiruchirapalli and other places. Such expertise can be further developed and channalised for export oriented activities. The Electronics

Commission recognised that the area of computer software is one that needs to be developed rapidly for various reasons. A great deal of software has to be generated for a variety of computer applications, particularly using indigenously manufactured systems. Software development and data preparation offers the possibility of providing significant employment particularly for mathematically, trained scientists and engineers. Once the necessary software tools have been obtained and mastered here, and appropriate links with groups abroad have been forged, there should be a potential for export of software. The Department of Electronics will, therefore, endeavour to make time available to software groups on existing computer systems in the country. However, time for software generation will be provided by the Department on a guaranteed basis, in the proposed Regional Centres, when these are set up. Further more, under certain terms and conditions, the Department allows import of computers specifically for software export. Indeed, import of a number of computer systems, 2 from USA (Burroughs B 1700 and B 6700) for the Tata Consultancy Services (TCS), three R1030 computers from USSR for the Administrative Staff College, Hyderabad, and the Operations Research Group Baroda, and M/s. Comptronics Ltd. New Delhi over a five year period and IR1040 from GDR for Engineers (India) Ltd. primarily for development of software for export, have already been approved on this basis. In all these cases software export will met on a guaranteed basis, the cost and in some cases several times the cost of the imported systems concerned. For instance, Rs. 1 crores worth of locally developed software has been committed for export to the USSR during 1975-76 of which Rs. 30 lakhs worth has already been exported."

7.33. During evidence the Committee pointed out that since labour was plentiful in the country, efforts should be made to earn foreign exchange by developing and exporting computer software. The Secretary, Electronics Commission stated:

"We are very conscious about the potentialities of software export from this country. We have financed the procure-

ment of computers in three or four institutions, the Administrative Staff College of India, Hyderabad, the Operational Research Group at Baroda, and EIL, Delhi. These organisations have acquired machines from the Soviet Union with the specific purpose of using them to develop software for re-export. In fact, we hope to have a growing programme of software export to the Soviet Union who will build it upto Rs. 3-4 crores over the next four or five years. As regards Western markets there are certain logistic problems.

Promoting software export through providing computer facilities in institutions like the Administrative Staff College, IITs, etc. is one aspect. A second approach is providing time on existing machines, to small groups of computer scientists, who operate outside large institutions but who specialise in the generation of software. This is also a direct component of our policy. In the case of certain computer system, which have been permitted to be imported, the Department of Electronics has taken the option of one-third time on the computer in order to give access to such professional groups who generate software for export. Therefore, export of software and use of manpower for generation of software is an important component."

7.34. Asked whether any study had been made about the potentials of export of software to other countries, the Secretary, Department of Electronics stated:

"I shall inform the Committee that software is one of the areas which India should explore on account of the fact that software generation involves highly skilled manpower, essentially people with B.E.B. Tech. M.Sc. and so on. We are not dealing with unskilled labour but highly skilled labour and at that level India today is perhaps the cheapest country in the world and the wage differentials compared to elsewhere in the world are very significant. Therefore, we can do it, software export, if we are given the right marketing outlets. The problem is not so much of development software. We have computers; we have manpower and we can do this. We must be able to break into the market, establish the right contacts and be able to sell it because after all software has to go either to the computer companies or to go to large software users who are concerned with application areas and so on. You do

not sell software in the pure consumer sense condition, anyone who imports a computer whatever size it be, for software development must give a guarantee of earning 100 percent of that in foreign exchange and we are monitoring this. There are several groups: the Administrative Staff College in Hyderabad, O.R.C. in Baroda, Compu-tronics Group in Delhi, who are acquiring computers from the USSR; Engineers India is getting East German computer. These are all acquiring computer for export on a guaranteed basis; their suppliers at the other end have guaranteed to buy software provided it is acceptable. Some of the packages already generated have been accepted and bought. The Tata Consultancy Service in Bombay have been allowed to bring in two Burroughs computers and they will export software to Burroughs, who have given a guarantee in the agreement itself. Many private individuals coming from abroad have used their own foreign exchange savings abroad and bring in IBM 1401 which they have already known and used; and they plan to do some regular data preparation work and export this to Middle-east countries particularly. We are thus trying to generate software as an export area."

7.35. The Committee learnt from press reports that certain proposals with regard to the setting up of a Joint programme by Burroughs of USA and Tata Consultancy Services in India were currently under consideration: In a note furnished to the Committee the Department of Electronics have stated:

"Burroughs Corporation, U.S.A., and Tata Consultancy Services, Bombay are proposing to collaborate on a 5:50 per equity basis, in setting up a joint-venture to manufacture computer peripherals in India for 100 per cent export. Some informal discussions have taken place between the representatives of TCS and the Department of Electronics in this regard but the formal proposal has not yet been received by the Department.

Presently, Electronics Corporation of India Ltd. (ECIL), manufactures only the Central Processing Units of their various computer models such as TDC-312, TDC-316 and integrates peripherals (imported or obtained indigenously) to their CPUs. The joint-venture of Tata Burroughs as proposed is for manufacture of computer peripherals and that too for 100 per cent export. The formal proposal:

for this joint-venture, when received by the Department of Electronics, will be considered in all its aspects such as technological gains, foreign exchange earnings and investments, development of human skills and also its impact *vis-a-vis* current and anticipated indigenous production programme for similar products manufactured currently or scheduled for production at Electronics Corporation of India Limited, Bharat Electronics Ltd., Hindustan Teleprinters and others.”

### **Computers Maintenance Corporation**

7.36. The Committee were informed by the Department of Electronics that a proposal to set up a Corporation for the maintenance of computers in India had been approved by the Government. This Public Sector Corporation will undertake maintenance and servicing of computers, particularly those that are imported, and also provide systems software and application support as needed to the extent possible. The Corporation's comprehensive responsibilities include:—

- (i) planning, coordination and implementing the national effort on computer and associated equipment maintenances;
- (ii) system-engineering, installation, and maintenance of data communication and terminal equipment other than what lies within the purview of the P&T;
- (iii) conducting training on all aspects of computer and allied equipment maintenance and systems and diagnostic software;
- (iv) disseminating maintenance information and supporting maintenance research to stimulate production for indigenous consumption as well as for export; and
- (v) providing a central repository of computer spares, materials etc.

In addition to Head Office, the Corporation would have branches at major computing centres. According to the Annual Report of the Department of Electronics for the year 1974-75, the initial outlay on testing, maintenance, training, research and development and other expenditure was estimated to be of the order of Rs. 184 lakhs, which would be met by equity and Government loans.

7.37. During evidence the Committee enquired about the progress made so far in setting up of the Corporation and that was the anticipation of the work it would be able to do in the near future. A representative of the Department of Electronics stated:

“The Memorandum, the Articles of Association and a programme of action for the next two years have been drawn up by a Committee in the Department of Electronics. It has also been decided that the headquarters of this Corporation will be in Hyderabad. Empanelling of names of potential staff viz. engineers who can serve on this Corporation has also been done. Accommodation for the Corporation to operate from three locations—with Hyderabad as its headquarters and having cells in Bombay and Delhi, has been already earmarked. The papers are now with the Registrar of Companies at Hyderabad, and the registration formalities will be completed by the first week of December. As soon as this is done, the Corporation will be set on its stream and, hopefully, they will take up their first responsibilities by March-April, 1976.”

7.38. On being asked whether the multinational corporations like the IBM were trying to do something to delay or to prevent the successful accomplishment of tasks undertaken in regard to the proposed Corporation, the witness stated:

“In our discussion with the multi-national corporations, primarily from the Department of Electronics, with regard to recommendations for import of maintenance spares for the next financial year 1976-77, they have been very explicitly informed that the Computer Maintenance Corporation will take over the responsibilities on a phased basis. The import of spares for the next year through IBM will not be on the same scale as it was last year. We are discussing with them about the phasing down of imports of spares with regard to systems that will be transferred from their responsibility. Now, with instructions having gone to them, under FERA, within one month, they have to respond and that will be the time when we will sit with them and draw up a phased programme.”

He further added:

“With regards to IBM computers that are to be currently imported or that have been very recently imported, we

have an instance where one IBM computer has been obtained by the Oil & Natural Gas Commission at Dehra Dun and it has been installed in the last two months; here we have very specific arrangements that maintenance for these systems will be done by the engineers from ONGC or from the Computer Maintenance Corporation. As per the agreement at the time of purchase of this computer with the IBM, it has been specifically stated that the IBM will train our engineers, this is, the personnel from ONGC or the Computer Maintenance Corporation, that the training is to commence in early 1976. So, with regard to the computers of IBM origin coming into the country now or to come in future, the maintenance responsibility is totally delinked from IBM at the time of purchase.

With regard to the existing computers, that have been obtained through outright purchase, we have a phased programme whereby the more powerful ones, IBM 360/44 etc. will be taken over by the Corporation. There are two in Delhi at the University of Delhi and Indian Meteorological Department, there are two computers, under the control of the Space Commission, and there is one computer with regard to these five major computer systems, we have already understanding with the users that they would be willing to shift them over to the Computer Maintenance Corporation. There is one more major computer of IBM origin at the Indian Institute of Technology, Madras, regarding which we are having discussions with the IIT and they have indicated that **they** will also be willing to shift it over to the Computer Maintenance Corporation. With regard to the others, **these** are very small machines like the IBM 1620 with the Planning Commission, with the Agricultural Research Institute and various Universities and so on. These are also largely outright purchased machines. Though these are obsolete, because they are in Universities and so on, one could, hopefully, continue to use them for quite some time. There is no difficulty with regard to taking over the maintenance of these."

The real problem would arise with regard to the computers which are on rental. Currently these are the property of the IBM, and with regard to these, we shall have to have very specific negotiations. We shall have to work

out the pros and cons and give directives to the IBM with regard to phased change-over of these.

There is also the problem of the unit record machines. The whole lot of accounting machines, purchase and tabulators have been largely hired out by IBM. The problem will be the same as for hired computers, but the situation is reasonably under control and in fact, in the priorities of the Maintenance Corporation, when it was planned, one had really thought that one may not invest too much in the Corporation, to take over the maintenance of obsolete machines such as the IBM 1401, but now in terms of the guidelines, we have to modify that and we have to speed up our programme of take over and cater for these machines also and we are geared for that."

7.39. The Committee pointed out that since the machines hired out by IBM were obsolete machines, the Maintenance Corporation should not bother about these machines as in any case they have to be replaced. In this connection, the Secretary Department of Electronics stated during evidence:

"Well, the point really is this that we are not going to bother about the computer systems which go out by becoming obsolete/unusable. But there are a large number of computer systems which exist and will continue to operate for some period of time. They will essentially have to be taken over at their depreciated value and maintained and operated."

7.40. Asked whether any arrangements had been made to take over these machines and what were the terms on which the liability for servicing and maintenance of these machines would be undertaken, the witness replied:

"We have not entered into any arrangement for the simple reason that the formation of the company has just been approved by Cabinet and we are in the process of constituting it. It is going to be registered. We have worked out the total schedule of operations. We will make absolutely sure that the company does not take on commitments which really are the responsibility of IBM. Our responsibility is really to the user more than to anybody else. We do not want a situation where IBM having been forced out, the user is left high and dry without the



capability of using the machine in case it is capable of being used, without maintenance. We have to ensure that this does not happen.”

7.41. The Committee desired to know whether IBM was agreeable to the maintenance of their machines being done by the users or the Maintenance Corporation. A representative of the Department of Electronics stated:—

“As far as the IBM policies are concerned, they have no objection to users carrying out their own maintenance and they are prepared to train the user personnel on maintenance of computers. So, it is within the policy framework of IBM that non-IBM agencies can maintain their computers.”

7.42. On being asked whether it was obligatory for the non-IBM agencies to get their personnel trained through IBM, the witness stated:

“The training of maintenance engineers will have to be on the particular equipment they are going to maintain. So, it is correct to say that with regard to IBM computers, training would be available from the IBM just as with regard to any other manufacturer, we will get the training from the respective manufacturers.”

7.43. The Committee were informed by the Department of Electronics that after a review of the activities of IBM and ICL it had been decided that both of these companies should terminate their trading and services activities within the next two years and that their maintenance activities should be progressively handed over by them to the Computer Maintenance Corporation. It was further stated that, as regards ICL the transfer of maintenance activities to the Computer Maintenance Corporation and the phasing out of trading and service bureau activities of ICL and concentrating all production in ICIM had been recommended. During evidence the Committee asked why a similar recommendation has not been specifically made with respect to IBM. A representative of the Department of Electronics stated:—

“IBM is only a branch of the IBM World Trade Corporation. They are not an Indian company by any means. In today’s context, the manufacturing operations under IBM are those of a branch of a foreign company whereas with regard to ICL there are two operations. The Marketing

Wing of ICL is a subsidiary of ICL(UK) and is registered as an Indian company with 100 per cent ICL equity. The ICIM (the International Computers India Marketing) which is running the manufacturing organisation in Poona is an Indian company with 60 per cent ICL shares and 40 per cent shares from Indian equity out of which the major part, I think, half of that 40 per cent is held by public financial institutions. Therefore, these are two separate companies and our view based on the guidelines was that ICL(India) which is essentially a 100 per cent foreign branch should phase out its operations and transfer the manufacturing, that is there under them with regard to punch cards and so on, to the ICIM, which is an Indian Company. That is well within the guidelines."

He added:

"While IBM has reiterated that they will not be amendable to dilute their equity and that they will operate only with 100 per cent equity, ICL in all their discussions have indicated that they will be prepared to dilute the equity as per our terms here and go with the policies of the Government."

7.44. In reply to a question whether IBM had agreed to the transfer of their maintenance activities to the Computer Maintenance Corporation, the witness stated:

"Across the table, they have not raised any objection.

In the case of the ONGC computer, they have already signed a contract that they would train our people. With regard to others, they would generally be willing to go by government directions in this regard. But presently, we have to make sure that maintenance difficulties do not get amplified."

#### **Training programme of IBM-ICL**

7.45. The Committee's attention was drawn to the following observations contained in the Annual Report of IBM for 1974:

"During the year, IBM continued to expand its efforts with minority agencies in developing and continuing manpower training programmes. Recognizing the over-increasing need to upgrade employment skills of disadvantaged people, the company has committed manpower and equip-

ment to various local, regional and national programme. IBM personnel at all levels of the business are participating in varied projects, teaching courses in computer operation, programme, key-punching and secretariat skills developments."

7.46. It is understood that as a part of Customer Service, both IBM and ICL offered training programmes for the data processing personnel of the user departments. In a note, the Department of Supply intimated:

"As part of the terms of the agreement for hiring of IBM unit record machines installed in 1972, there was the following provision:—

"IBM at its discretion provides to its customers without charge its education, system engineering activities and programmes. At present IBM is reviewing its customers assistance policy and may revise this policy. Such revision could result in charges to customers for certain types of education, system engineering activities and programmes. In the event of such revision, IBM will give the customers reasonable notice prior to the date such revision is effective as to the customer. Upon receipt of such notice the customer will have the right to cancel this agreement at any time prior to the effective date of the revision."

7.47. The Committee wanted to know the number of Indians who had been trained by IBM in sophisticated technology and at what level. A representative of the Department of Electronics stated during evidence:—

"The training by IBM of Indian personnel has been at different level; basically they have been training programmers and system analysts for all the user installations and today IBM have about 144 installations in the country. I can make only a guess at this time; if one works on the basis of about 12 persons per installation there should be anything upto 2,000 persons who had been trained by IBM. Apart from that there had been a few special training fellowship or foundation

grants which IBM have granted to some selected personnel in the country; it may not be more than a dozen persons."

7.48. In reply to a question whether we were largely dependent on IBM trained personnel, the witness stated:

"The personnel trained by the IBM is only for their installations whereas computers which we have installed in the Government of India Offices is at the Department of Statistics and there is a computer training centre. The Department of Statistics have trained over 500 personnel for using computers in Government. This apart ICL is training personnel various Institutes of Technology also include training in programming and so on in their curricula. There are certain private organisations which offer training course like Datamatics Corporation, Computer training institute here in Delhi, etc. These are all training courses."

He added:

"In regard to training computer hardware design, it is essentially included in the post-graduate courses offered by the IITs at Kanpur, Bombay, Madras, Khargpur and also the Jadavpur University at Calcutta. They offer post-graduate courses in computer hardware and software design. These are the major training institutions in computer hardware design."

7.49. In the same context the Secretary, Department of Space stated:

"I have been associated with the educational process in several of these sophisticated areas, some 8 or 10 areas. It was quite apparent to us that the University Research Centres in our academic institutions will receive a very wide variety of computer knowledge from the simple operation of computers to the analysis to the data processing, to the systems processing and designing computer themselves. The University Grants Commission at that time took the view that there were small mushroom little groups like the classes now in our country for training typists who train computer processors or programmers or operators. We took a conscious step at that time that every university which gets grants from the UGC should set a training

programme so that we have a national system and it is not depending entirely on the commercial process and accept a little training so that people can get jobs. I think this has been fairly successful. There are a fairly large number of institutions in the country now which offer formal courses. For this purpose we, at the Indian Institute of Science, are running programme course in which the fees are very low. In fact we sometimes give scholarships to people and sometimes there have been complaints to us by the private bodies including the IBM, once or twice, that we are training such people and they are opposed to this kind of training. The answer to this is that we cannot depend on computer training being given by these private bodies because their purposes are quite different from our purposes. There is some consciousness about it and I hope as the system develops it would be a much healthier system. The IITs, two of them, have very good computer centres and Jadavpur is a pioneer, to some extent, in designing and development of computers in our country and we are fairly in close touch with the Computer Society of India, a professional body, which annually holds a meeting and discusses some of the problems, the utilisation including mal-utilisation of computers because the training of our young people is vital. I think there is a core group which is doing this."

He further explained:

"Our national computer manufacturer which is a major one in our country, is beginning to play a very good role in this respect, in the computers which they are manufacturing. They have contacts with all our educational institutions which are using computers and these are joint programmes and seminars and workshops which they have organised too. This has been very important as a counter measure of having our own system growing."

7.50. The Committee desired to know whether some special efforts had been made to have training institutes for the computer engineers and programmers and whether IBM had helped us in this behalf. A representative of the Electronics Commission stated in evidence:

"As far as training is concerned, we have consciously permitted the training in computers in some specialised areas.

For example in the Jadavpur University, now we have started that. We are now putting up a regional computer there and around that a considerable amount of training programme is also being generated. The way we view training is like this, we do not think that the training should be given in a vaccum. We will only generate theoreticians. What we want to do is to put in certain facilities in some places as we did in the Indian Institute of Science in Bangalore. For instance it is now generating computer engineers in fairly in large numbers. Similarly in the Tata Institute of Fundamental Research, there has been a traditional training in programmes which has generated the computer people at all levels. This is what we are doing in a very conscious way and we are quite aware that training is a very important aspect."

7.51. Asked whether in the matter of training guidance of IBM or ICL, from whom all hardware had been obtained, was taken, the witness replied:

"That is not quite true that we are only dealing with these two people. It so happened that the IBM and the ICL have certain devices or training people because hardwares are provided for by them. That is a kind of manufacturer's training. Apart from that we do not think that that should be the only thing in the country. So, we have ourselves provided that in the sense that the country has put in its own effort in order to provide that training apart from the manufacturer's training."

7.52. As to the nature of training imparted by IBM to Indian personnel, the witness stated:

"As far as IBM training is concerned, it has really to be viewed in two contexts—one is the training given to their own employees which, of course, they make use of and do a fairly good job of it. Of course, they provide only that kind of information that is required for them to carry on the business over here. In other words, their training programme is completely geared to their business interests and activities here."

7.53. Adding further in this context, the Secretary, Electronics Commission, stated:

"There are two components to this—one is the operation of IBM in this country and the other is the operation of the IBM

primarily in the U.S. and Europe where there are major R & D (Research and Development) facilities that exist. As far as this country is concerned, their programme has been very sharply focussed one relating to training the customer personnel in the use of equipment and software which they supply. Normally, the Customers training by the equipment supplier does not involve any broadbased training of manpower of what one might call 'national pool of manpower' in the sense that they have given us men here. For example the IIT provides actually the fellowship programming under which they do the fellowship programming to some in this country and some abroad. These have already really been, if I may say so, the kinds of the icing of the cake. The system that they have to sell as my colleague mentioned."

7.54. The Committee enquired whether IBM was running any training institutes. To this, a representative of the Department of Electronics replied:

"They do not have training institutes. But, they have certain centres of system research as they call it, which they have set up in various countries. They have set up a centre for steel expertise in France, a centre for environmental studies in Italy and so on. These are essentially programmes where IBM says 'You allow us to import a computer and allow us to operate it here; we will help you in carrying out studies in various sophisticated areas.'

7.55. The Committee then wanted to know the details of similar facilities given in India. The Secretary, Electronic Commission replied:

"One has to be awfully cautious in this. It is our concern in this country to have a self-reliant capability and minimise our dependence to the maximum extent possible on these multi-national companies. As you will appreciate, manpower is the key to the whole process, and therefore, this is a matter where we feel, one has to be somewhat cautious in terms of using the facilities set up by these companies, whether it is IBM or it is ICL. When they train people, it will always be a slanted kind of training. It will always be a slanted kind of training. It will always be a training which may, by external appearances, look like a basic kind of scientific training, but it will all be

related in some way or the other to the kind of equipments which they sell, to the kind of further equipments which they intend to put in the market and to the kind of market which they wish to prepare for these equipments which they intend to produce. Therefore, our thrust all along has been to use our own national centres, to use the IITs and institutes like the Institute of Science to train these people."

7.56. The Committee desired to know whether maintenance activities could be taken over by the Computer Maintenance Corporation without the help of IBM or ICL. A representative of the Department of Electronics stated:

"In the initial period, we will depend on persons with experience in maintaining such systems. Today a large number of them are with IBM, and there are quite a number of them outside also, willing to work with us."

7.57. The Committee wanted to know if it will be technically impossible for our own staff to train the personnel on IBM machines. The witness replied:

"The Corporation personnel will be trained in one particular system at first and subsequently for more number of systems of the same type. The Maintenance Corporation engineers who had their initial training from IBM, ECIL etc., will impart training within the corporation to other engineers. Initial training will be restricted to the first system of any type to come in where 2-3 engineers will be trained by the manufacturers. Subsequently, a large number of people required within the corporation will be trained by our own engineers."

7.58. The Committee enquired about the present strength of the trained personnel in the country whose services could be requisitioned for the Computer Maintenance Corporation. The representative of the Department of Electronics stated:

"There is a background to acquire the training capabilities in India itself. Way back in 1963 the Controlled Data Corporation computer CDC 3600 was obtained by the Tata Institute of Fundamental Research, Bombay. That organisation itself undertook the maintenance. That has been the one installation perhaps in the world where the user was very remote from the manufacturer. In fact, CDC has no



office in India and they are 7000 miles away, and the user maintained his own equipment. We have the expertise in maintaining such computers and to-day in the Government of India, there are ten Honey-well computers in the Department of Statistics and other organisations which are maintained by user engineers on the staff of the various installations using them. So we have a nucleus of trained personnel in the country in the various computer installations. The Computer Maintenance Corporation is still to start its operations, but we have empanelled a number of trained engineers who are very willing to join this corporation to make a start and as soon as we do this, we will train up other engineers with regard to the new systems that are to come in. . .

With regard to the computers from the Soviet Union, our own engineers from the user agencies are sent to Soviet Union for training on the Soviet computers that have been installed. A marketing organisation of the Soviet Union has trained our own engineers on these and we have a nucleus of engineers trained on these system.

This is how we are building up and we do not anticipate any difficulty with regard to availability of qualified and very loyal engineers to take care of maintenance of these computers."

7.59. The Committee were informed that there were about 400 Indians in USA operation of IBM. Referring to these personnel the Committee enquired whether they were on complete loss to the Indian economy as they may not like to come back because of fantastic salaries paid to them. A representative of the Electronics Commission stated:

"If they are only scientists we would not be worried much. They are brass-tack engineers who are in the production departments with high-level know-how. Now, they get on an average 25,000 to 30,000 dollars as salary and, I do not think, if Electronics Commission of salary. We can only appeal to the national spirit of these people."

7.60. Giving details of the Indians employed by IBM in U.S.A., a representative of the Ministry of External Affairs stated:

"Well, there are a number of Indians in the US and there are various categories of status of these Indian-American

citizens, green card holders etc. They have access to working in various Research and Development Organisations. Others are green card holders. On that basis, they have got jobs in a number of IBM factories. There are some plants where there are a sizeable number of Indians working for IBM. We have been trying, as part of our general policy, to discourage brain drain and attract Indian talent in the United States towards more constructive cooperation with the counterparts in India by various means. It is a complex problem. One suggestion that emerged from a conference which our Ambassador held in New York a few months ago and at which a large number of Indian scientists and others working in the United States were present was that Indians who live abroad and who for various reasons are unable or unwilling to come to India should be provided with certain incentives for visiting Indian institutions on a short-term basis."

7.61. The Committee wanted to know if these Indian nationals would be prepared to come to India if they get facilities here for their scientific activities. The witness stated:

"There are a large number of Indians who are patriotic enough to come back if some procedures could be worked out at least for short periods including lecturers, etc., because they may not want to give up their good jobs there. It is a rather complex problem."

7.62. The Committee enquired whether any attempt had been made to draw upon the Indian talent abroad particularly in the employ of IBM. The Secretary, Department of Electronics stated:

"I think the question will have to be divided into two parts. Firstly, these are Indians who are working in India in these companies. From my personal knowledge, I think all of them—at least many of them—would work in another environment in the country once an opportunity is given to them. With regard to those who work abroad, it will be very difficult to say because this is a general problem. There are people working not only in IBM but there are people working in Westing House and many other chemical firms and so on. This is a general problem and one has to discuss about the brain drain and return of Indians etc.

7.63. The Committee learn that the Working Group on Computers, Controls and Industrial Electronics of the Task Force on Electronics and Communications of the Planning Commission has estimated that there would be demand for 800 small and mini-computers in the country during the years 1975-76 to 1978-79. The demand for medium size computers according to the same estimate would be 208, while that for large computer installations 12. However, taking into account the somewhat limited current awareness of how well the computer can be used for development and the constraints on expanding this awareness, the Electronics Corporation of India have estimated that the demand for computers in the small and medium class during the period 1974-79 will be about 650 installations only. The Committee feel that projections for the future demand of computers should be based on more realistic considerations as any effort to evolve an effective strategy directed towards self-sufficiency in the field of computers would be meaningless in the absence of a reliable qualitative and quantitative estimate of the demand that exists now and is likely to arise in the country in the future.

7.64. An analysis of the status of the computer industry in India and indigenisation capabilities reveal that the present indigenous effort in the production of computers is very limited. Currently the only indigenous computer manufacturing programme in the country is that of the Electronics Corporation of India, who are at present manufacturing only computers in the mini and small range (TDC-12, TDC-312 and TDC-316). Although developmental work on a medium scale computer (TDC-332) is stated to be in progress, actual production is anticipated only in 3 to 4 years time. The manufacturing programme in ECIL began in 1969, but till now, only some 60 systems have been produced and installed.

7.65. It is further seen that even the present indigenous computer manufacturing programme is largely based on imported peripherals (input-output equipment) and components (such as semi-conductor devices, ferrite core memories etc.) Except for the systems engineering and design capability where indigenisation is stated to have been largely achieved, ECIL is dependent significantly on imports for vital components and materials. So far as the peripherals are concerned the country has still to make considerable leeway in indigenisation.

7.66. Bharat Electronics Ltd., another public undertaking engaged in the manufacturing activities relating to computers is

stated to have built up considerable competence and expertise in the computer and computer peripheral area, both with regard to indigenous design and development activities as well as production activity. Its present manufacturing activities, however, are restricted to the manufacture of a limited number of ICL 1901-A computers (only Electronics portion) under the terms of an agreement with the International Computers Indian Manufacture Ltd., which is an ICL associated company. The Government of India has so far licenced ICL for production of only 32 Nos. of 1901 systems, out of which BEL has already manufactured and supplied 27 and would be making the balance, that is, five, during the course of another year.

7.67 Keeping in view the large demand for computers and data processing equipment as projected in the estimates for the Fifth and Sixth Plan intensive efforts require to be made to step up the production of indigenous computer system.

7.68 The Committee note that the strategy developed for attaining self reliance in the field of computers has the following four main elements:—

- (a) Ensuring that the direction and pace of advance of production capacity for computers and allied equipment, as also the availability of appropriate computational facilities both for direct use and for supporting the development of software tools are determined by national needs, priorities, and requirements;
- (b) The Key-segments of the computer industry are under national control and free from any monopolistic trends;
- (c) That a viable indigenous programme of production of computer hardware and software is built up to meet national requirements and to generate surpluses for export; and
- (d) That over a period of time, a substantial part of the technology needed for the design and production of systems, sub-systems, components and materials and also the supporting software is generated through indigenous research and development; what is more, that such technology will be appropriate to our needs and over a period of time become contemporary in terms of international availability.

7.69 The Committee also note that the Technology Development Council of the Electronics Commission has funded a number

of research projects in R & D laboratories like Tata Institute of Fundamental Research and two production units like ECIL and BEL to develop CPUs, Software and peripherals for manufacture of small and medium-sized computers. The Bharat Electronics and Hindustan Teleprinters are understood to have developed, on their own, prototype of certain peripherals such as paper tape readers, paper tape punches and matrix type printers. The Department of Electronics has also given design and development grants to BEL through the Technology Development Council, for the design and development of more sophisticated peripherals like Card Readers, Line Printers and Magnetic Tape Transports.

7.70. Certain indigenous manufacturing firms in the private sector who have the capability of undertaking design and development activity in the field of computers have also been identified and the question of utilising them for this purpose is under consideration.

7.71. The Department has finalised the proposals to set up the Semiconductor Corporation for making large scale integral circuits indigenously in the public sector.

7.72. The Committee note that there has been phenomenal increase in the Semiconductor Industry and that already large scale integrated circuits are available which incorporate as many as 20,000 transistors, diodes and other elements on a single chip. Technology is stated to have been developed elsewhere in the world which can bring product into the markets having close to 100,000 transistors, diodes and such other elements on a single chip within the next three years. Several companies abroad are in advanced stage of research for putting a million gates on a chip.

7.73. The Committee note that according to the Department of Electronics, requirements of large sized computers, and some sophisticated peripherals and components would continue to be met by imports even after the Fifth Plan period.

7.74. The Committee would like to point out that technology in computer industry has been growing at a fast rate and that even in terms of sub-systems, technology is available from a very large number of sources. For example for CPU, it is understood that there are at least 40 independent manufacturers from whom technology could be bought and for peripheral units the number is twice as large.

7.75. The Committee also note that according to the Department "in the computer industry, there is no such thing as exclusive knowhow for which alternatives do not exist."

7.76. The Committee feel that broadly speaking the approach of the Department of Electronics is on the right lines. What is required is time-bound and achievement-oriented action. Apart from the need for setting up the Corporations in the public sector for manufacture of Semiconductors and Maintenance of Computers, it is imperative that a close and integral link with the Electronics Corporation of India—the pioneer in the field—is constantly maintained.

7.77. The Committee understand that after an extensive analysis about the kind of computer technology which was relevant to the Indian conditions, the Information, Planning and Analysis Group of the Electronics Commission has come to the conclusion that about 75 per cent of computer capacity requirements of the country could be met through mini-computers and mini-computer networks and the remaining 25 per cent through maxi-computers. The Department of Electronics has accordingly been directing its efforts towards establishment of a mini-computer industry in the country and an active promotion of applications for introduction of mini-computers in various sectors relevant to national development. The total national demand of around 400 mini-computers by 1978-79 is expected to be met through indigenous production. How this target of production will be reached is however not clear, as presently only some applications from the prospective entrepreneurs for grant of industrial licences have been received and are being processed. Since mini-computers are to be used for a large proportion of our computational requirements in future and they can very well replace the old and obsolete IBM 1401 machines etc. the Committee desire that the Department of Electronics should work out time-bound schedules for creating the necessary infra-structure for the production of these computers.

7.78. Another important area where attention has to be paid is the development of computer software. A great deal of software has to be generated for a variety of computer applications, particularly using indigenously manufactured systems. The software generation also involves highly skilled manpower, which is abundantly available in the country. Moreover because of the availability of skilled labour, this activity is eminently suited for export promotion. The Committee are glad that the Department of Electronics is fully conscious about the potentialities of software export from this country and they have already initiated action in various directions for software development. According to the Secretary, Department of Electronics, the problem was not so much of development of software as of finding the right marketing outlets. The

**Committee would like the Department of Electronics to sustain its efforts till success is achieved.**

**7.79. For attaining the goal of self-reliance in the field of computers, the Committee feel that there is need for intensifying Research and Development. In this behalf a three-fold approach is called for:**

- (i) There should be clear demarcation of duties and responsibilities, a major share being given preferably to R&D Sections of the production unit concerned.**
- (ii) There should be closer coordination between the scientists and technologists so as to achieve viable production in the quickest possible time.**
- (iii) Those concerned with R&D may hold periodically a workshops meeting where technicians/scientists concerned should present facts and prototypes etc. to bring out the precise progress achieved.**

**To this meeting could be invited directors of manufacturing units in public sector, Research Institutions etc. so as to facilitate an objective and meaningful review of the progress made and to throw up concrete ideas to speed up progress.**

**7.80. The Committee recommend that Government should draw up a plan outlining the general strategy for self-reliance in computers, and in particular, the manner in which it is proposed to meet the anticipated large requirements of mini-computers. In this context, the Committee note that as at present the manufacture of mini-computers would mostly be an assembly operation, since such items as memory cores, integral circuits, peripherals etc. are to be imported. In the circumstances, it is of the utmost importance that there should be a well thought out programme so that only the minimum number of units for whom work on long-term basis would be available are set up. The Committee would like Government to consider whether it would not be better in the circumstances, that the manufacture of mini-computers is developed either as a subsidiary or ancillary activity of the well established public sector units already in the field. The Committee need hardly point out that it is only after the essential components like memory cores, peripherals, soft-ware, etc. are developed and manufactured in adequate quantities and made available at competitive prices so that small units in the cooperatives or private sector can be expected to undertake manufacturing activity in a meaningful manner.**

7.81. The Committee would like Government to go into all aspects of any foreign collaboration proposals which may be received including the reported tie-up between Burroughs and the Tata Consultancy Service. Government should ensure that no foreign company secures a position in the field of computers either on its own or in collaboration where it could dictate its own terms or even remotely pose a potential security risk.

7.82. The Committee have been informed that the Computer Maintenance Corporation is being set up under the Department of Electronics with headquarters at Hyderabad and branches at Bombay and Delhi. The objectives of the Corporation include inter alia system engineering, installation and maintenance of data communication and terminal equipment, planning, coordinating and implementing the national effort on computer and associated equipment maintenance, providing a central repository of computer spares, materials, etc.

7.83. The Committee feel that there has to be a built-in link between the Computer Maintenance Corporation and the Electronics Corporation of India which is the principal public sector undertaking and has already manufactured and put into service about 60 computers.

7.84. The Committee note in this context that while the Electronics Corporation of India Ltd., is working under the administrative control of the Department of Atomic Energy, the Computers Maintenance Corporation would be working under the Department of Electronics. In this context, the Committee would like to draw attention to the recommendations made earlier by the Estimates Committee in their 66th Report (Fifth Lok Sabha) and re-iterated by them in their 85th Report (October, 1975) that Government should consider the question of transferring the administrative control over the Electronics Corporation of India Ltd. from the Department of Atomic Energy to the Department of Electronics. The matter is understood to be still under the consideration of Government. The Committee feel that if both these Corporations (Computer Maintenance and Electronics Corporation) are brought under the administrative control of the Department of Electronics, it should be possible to foster an integral linkage from the very inception. This would be in the interest of avoiding overlap and ensuring proper distribution of duties and responsibilities.

7.85. The Committee understand that while no difficulties were anticipated in taking over the maintenance of Computers from ICL,



the talks had not yet reached the conclusive stage in respect of IBM. The Committee would like these matters to be finalised at the earliest, the arrangement should be such as to ensure a smooth transition so that the users can be assured of uninterrupted and efficient maintenance and servicing of the existing computers.

7.86. The Committee urge that the Department of Electronics should work out the requirements of technical personnel to match the manufacturing programme envisaged for the computer industry during the 5th and 6th Plan periods. This perspective plan should cover both the immediate and future requirements yearwise so as to provide a fair guide for development of training facilities in the requisite fields. Persons required for innovative leadership in this important technology may be got trained in consultation with the Department of Science and Technology in the Indian Institute of Technology, research institutions and universities. There should also be programmes for training of shop floor personnel in conjunction with the Electronics Corporation of India, Bharat Electronics, Computers Maintenance Corporation etc. It should go without saying that the training programme should be suitably designed and improved continuously in the light of experience.

7.87. Now that the country is going forward with a sizeable programme for computer manufacture, every effort should be made to publicise the new opportunities of work, so that some at least of the talented Indians working abroad could be attracted back to patriotically-motivated employment at home. Government should also consider ways and means of attracting those who are highly skilled in the field to come at least for a specified duration and to assist in the research and development effort in the critical areas of peripherals, soft-ware etc.

7.88. The Committee recommend that, as indicated earlier, Government should work out a comprehensive policy for self-reliance in the computer field, mentioning in particular how the requirements for computers in the Fifth Plan, specially of mini-computers, are proposed to be met. This, it is suggested, may be laid before Parliament in a white paper within a period of six months of the presentation of this Report. There might then be a pointed and purposeful national debate on the subject.

NEW DELHI;  
April 27, 1976.  

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Vaisakha 7, 1898 (S)

H. N. MUKERJEE,  
Chairman,  
Public Accounts Committee.

## APPENDIX I

(Vide paragraph 1.18)

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*Questionnaire issued on 12-12-73*

1. Please furnish a statement showing the purchase|hire of computers and other electronic data processing|accounting machines and accessories, equipments, stores etc. by the various Ministries|Departments during the last 10 years indicating against each item, *inter-alia*, the following:

- (a) Date of purchase|hire.
- (b) Source of purchase|hire (details of the firm whether incorporated in India or outside to be indicated).
- (c) Whether any competitive tenders were obtained? If not, the reasons therefor.
- (d) Who initiated the idea first and who negotiated the deal.
- (e) Purchase price|upto-date hire charges paid.

2. (i) Please state whether the purchase|hire had to be normally done through the DGS&D. If so, please furnish the details of purchase|hire done directly by the Ministries|Departments and the reasons therefor.

(ii) If any special relaxation of the procedure was necessary for the direct purchase|hire, please state whether such approval of the competent authority was obtained in all cases of direct purchases. The details of the cases in which this was not obtained may be indicated.

3. (i) Please state whether the terms and conditions of the agreement entered into by the various Ministries|Departments conformed to the standard terms and conditions. Please indicate the special features of the agreements duly supported by copies of the agreements and the justification thereof.

(ii) Please state whether legal opinion was obtained before finalising the agreements.

4. (i) Please state whether the purchase price or the rental, as the case may be, was expressed in terms of foreign currency. If so, the details of such purchase|hire may be given.

(ii) Please state whether in such cases payment had been made in terms of rupee. If so, what was the upto-date extra payment on account of devaluation of the rupee in 1966?

(iii) Please state whether in cases where enhanced payments was made on account of devaluation the equipments were imported prior to devaluation or were manufactured indigenously by the supplying firms. If so, the details thereof may be given.

5. Please state whether the agreements entered into with the supplying firms provided for unilateral rise in price|hire charges by the suppliers. If so, the details thereof may be given indicating the following:

- (a) Item-wise increase in price|hire charges.
- (b) Date of such increase.
- (c) Extra payment made on this account upto-date.
- (d) Justification for the increase.

6. In regard to cases of hire, please indicate the basis for the fixation of hire charges. Please also indicate how the upto-date hire charges paid in each case compare with the cost of acquisition at the time of initial hiring.

7. In regard to purchases, please indicate how the purchase price was determined. Please furnish the details of the purchase of items imported by the suppliers and the purchase price paid. In these cases what was the actual value declared to Customs at the time of importation by the suppliers? Was this checked up before making payments?

8. In the case of imports by the suppliers, whether the value adopted for the purpose of levy of Customs Duty was different from that given in the Bills of Entry? If so, the details thereof and the basis for the determination of value by Customs may be indicated.

9. What was the total amount of foreign exchange released to the various firms operating in India dealing with the computers and other electronic data processing|accounting machines during the

last 10 years? Please state whether these companies were allowed to repatriate the profits out of India and if so, the total amount repatriated during the last 10 years?

10. (i) How were the above firms assessed to income-tax?

(ii) Whether the difference between the cost of imports and the sale price of items dealt with by these firms was taken into account while determining the assessable income?

11. What was the justification for the purchase|hire of computers and other electronic data processing|accounting machines in respect of each Ministry|Department? Please state whether there was any job analysis and assessment of work load before acquiring these machines and what was the capacity of each machine acquired. Please also state whether the results expected were in fact achieved. If so, in what manner?

12. Please state whether the Inter-Ministerial Working Group which was set up in March, 1973 by the Department of Electronics to go into the reasonableness of the prices charged by the IBM has submitted its report and if so, a copy of the report may be furnished.

## APPENDIX II

(Vide paragraph 1.19)

*Questionnaire issued on 27-7-74*

(i) In regard to purchase, please indicate how the purchase price was determined. Please furnish the details of the purchase of items imported by the suppliers and the purchase price paid. In these cases what was the actual value declared to Customs at the time of importation by the suppliers? Was this checked up before *inter alia*, the following:

(ii) In the case of imports by the suppliers, whether the value adopted for the purpose of levy of Customs Duty was different from that given in the Bills of Entry? If so, the details thereof and the basis for the determination of value by Customs may be indicated.

(iii) What was the total amount of foreign exchange released to the various firms operating in India dealing with the computers and other electronic data processing|accounting machines during the last ten years? Please state whether these companies were allowed to repatriate the profits out of India and if so, the total amount repatriated during the last ten years?

(iv) (a) How were the above firms assessed to income-tax?

(b) Whether the difference between the cost of imports and the sale price of items dealt with by these firms was taken into account while determining the assessable income?

(v) Please state whether the inter-Ministerial Working Group which was set up in March, 1973 by the Department of Electronics to go into the reasonableness of the prices charged by the IBM has submitted its report and if so, a copy of the report may be furnished.

(vi) (a) Please state whether the workload and the purpose for which computers or other electronic data processing|accounting machines were purchased were determined.

(b) if so, please give details.

(c) if not, the reasons therefor?

(vii) (a) Please give details of the savings in wages effected as a result of the acquisition of these machines by the Government Departments.

(b) What are the other advantages, if any, accrued as a result of installation of such machines?

(c) Please also indicate the actual location of the machines.

### APPENDIX III

(Vide paragraph 2.7)

*Statement giving details of the data processing equipment acquired by different Govt. agencies and the applications for which they were acquired*

Ministry/Department	Details of equipment acquired.	Applications envisaged at the time of Computerisation.
1	2	3
1. <i>Department of Space</i>	Minsk-II	Scientific applications
Vikram Sarabhai Space Centre	IBM 360/44 TDC-12 Addl. units for system 360/44 IBM 0514 Reprodncer IBM 024 Card Punch-6 IBM 029 (A22) Printing and Interprinting Card Punch-17 IBM 056 Verifier-6 IBM 082 Sorter-1 IBM 0066 Collator-1 IBM 0407 Accounting Machine-1 IBM 0447 Accounting Machine-2	Research and Development.
Indian Scientific Satellite Project	TDC-12	Design & Fabrication of Satellites.
Physical Research Laboratory	IFM-1620 IBM-360/44	Scientific Research.
2. <i>Ministry of Railways</i>	14 Nos. IBM 1401 Systems.	(1) Internal check and accounting of passenger fares and freight traffic revenues; (2) Passenger and goods revenue statistics; (3) Fuel Accounting; (4) Operating Statistics; (5) Payroll preparation & preparation of workshop incentive bounds bills; (6) Stores accounting and inventory control; (7) Machine scheduling, production control and costing in workshops;
Zonal Railways & Production Units.		

1	2	3
		(8) Interchange and accounting of rolling stocks; and
		(9) Preparation of shunting orders of incoming and outgoing trains at the Mughal Sarai Marshalling Yards;
		(10) Linking of Loco coal Wagons.
3. Ministry of Tourism & Civil Aviation	IBM 360/94 Computer IBM 029/A22 Printing Card Punch IBM 029/A 12 Non printing Card Punch IBM 056/001 Alphameric Verifier.	Collection and analysis of meteorological data
(i) Indian Meteorological Department		
(ii) Dy. Director General of observatories Climatology, Poona	IBM 029 /A 22 Printing Card Punch. IBM 056/001 Verifier.	Punching and verification of meteorological data for the Climatological records.
(iii) Indian Airlines	2. Nos. IBM 1401 systems.	(1) Advance Reservations (2) Inventory of Stores and Spares. (3) Commercial Statistics. (4) Billing for Credit Sales (5) Control over Realisation of book Debts (6) Revenue Accounting. (7) Pay Rolls (8) Personnel Information (9) Retable Control (under implementation).
(iv) Air India	IBM 1460 system	(1) Preparation of time Bound statement such as interline bills pay rolls etc.  (2) Preparation of various reports for use by various levels of Management.
4. Ministry of Home Affairs		
(i) Registrar General of India	IBM 1401 Computer IBM Tabulator— 1 IBM Sorter— 1 ICL Tabulator— 1 ICL Sorters— 4 ICL Reproducer— 1	Processing of census data.



1	2	3
(ii) Central Bureau of Investigation	IBM 402 Accounting Machine IBM 548 Interpreter IBM 082 Sorter IBM 056 Verifier IBM 024 Auto Punch IBM 72 Electric Type-writer	Maintenance of Crime records.
5. Planning Commission	IBM-1620 Computer IBM-082 Sorter-1 IBM-1316 Disk Packs-10 IBM-056 Verifier-1	(i) Bulk data processing and statistical analysis for various types of censuses and surveys. (ii) Econometric analysis and solution of planning models. (iii) Scientific and Engineering computations.
6. Department of Statistics	3 Nos. Honeywell-400 computers	(i) Bulk data processing applications.
(i) Computer Centre, New Delhi	IBM Punching and Verifying Machines-24	(ii) Personal Records. (iii) Scientific Engineering & Statistical applications.
(ii) Central Statistical Organisation, Calcutta (I.S. Wing).	ICT Tabulator-1 ICT Sorter-1 IBM Accounting Machine-2 IBM 082 Sorter-1 IBM-514 Reproducing Punch-1 IBM-Numerical Card Punch-5 IBM-Numerical Card Verifiers-5 ICL-Programme Board Punch-6 ICL-Programme Board Verifier-3 ICL Collator-1	Tabulation work relating to Annual Survey of Industries.
7. Ministry of Commerce		
(i) Deptt. of Commercial Intelligence and Statistics	ICL -punches ICL-Verifiers ICL-Tabulator ICL-Sorter ICL-Collator IBM-Tabulator IBM-Sorter IBM-Reproducer IBM-Collator	Mechanical compilation of Trade Statistics.
(ii) Chief Controller of Imports & Exports.	IBM-024/001 Alphameric Card Punch-5 IBM-024 024/002 Numeric Card Punch-4	Mechanical Compilation of Import Export Statistics.

1	2	3
	IBM—056/001 Alphameric Card Verifiers—3 IBM—Card Collator—1 IBM—056/002 Numeric Card Verifiers—4 IBM—Card Sorter—2 IBM—Accounting Machines—2 IBM—Alphabetic Inter- pretor—1 IBM—Reproducing Punch—1	
<b>8. Ministry of Communications</b>		
(i) P. & T. Board	Elliot 203 Digital Com- puting system IBM—Card Punch IBM—Key Board Verifier IBM—Card Sorter	Scientific & Research and Development.
(ii) Overseas Communications Service	IBM—024 Punches—13 IBM—506 Verifiers—12 IBM—022 Sorter—5 IBM—082 Sorter—5 IBM—077 Collator—1 IBM—514 Reproducer—1 IBM—502 Calculator—1 IBM—447 Accounting Machine—1	Preparation of Revenue accounts in respect of Telephone, Telex and Telegraph services.
<b>9. Department of Agriculture</b>		
Directorate of Economics and Statistics	IBM—024 Card. Punch—2 IBM—056 Card Verifiers —9 IBM—029 Printing Card Punch—8 ICL—309/0 Sorter—1 ICL—1/7 Hand Punches —4	Date processing work.
<b>10. Ministry of Information and Broadcasting</b>		
(i) Central Sales Unit Commercial Broadcasting Service	ICL Data processing Machines.	Mechanisation of account- ing system.
(ii) Audience Research Unit	IBM—Accounting Machine—1 IBM—Sorter—1 IBM Card Punch—2 IBM—Verifiers—2	Tabulation work relating to Audience Research Units.
<b>11. Deptt. of Personnel &amp; Admi- nistrative Reforms</b>		
(i) Institute of Sectt. Training & Management	ICL—Sorter ICL—Tabulator	Processing of records for various examinations.

1	2	3
(ii) Union Public Service Commission.	ICL—Punches—8 ICL—Verifiers—6 ICL—Sorter ICL—Tabulators ICL—Reproducer	Mechanisation of work relating to various examinations.
12. Directorate General of Supplies & Disposals	IBM—Punches—5 IBM—Verifiers—4 IBM—Sorter IBM—Tabulator IBM—Reproducer	Processing of DGS&D purchase data.
13. Deptt. of Defence Production (Heavy Vehicles Factory Avadi)	IBM 1401-H system IBM-024 Punches-4 IBM-056 Verifiers-4 IBM-082 Sorter-3 IBM-Interpreter IBM-Reproducer IBM-Collator	1. Inventory Planning & Control 2. Production Planning 3. Pay Roll accounting 4. Cost accounting
14. Ministry of Irrigation and Powers		
(i) Central Water & Power Commission (Power Wing)	IBM-029/A22 Card Punches-2	Computational Work
(ii) Central Water & Power Commission (Water Wing) Statistics Directorate	IBM-029/A22 Card Punches-2 IBM-056/001 Verifier-1	Processing of Hydrological and other data.
(iii) Central Water and Power Research Station Poona	IBM 029/A22 Card Punch-1	Computational work.
15. Deptt. of Service & Technology		
(i) Centre for Survey Training and Map Production.	IBM Card Punches-2 IBM Card Verifier-1 HP 9101 - Memory Extender Hemlett Electronic Calculators Wild Electronic Coordinate Printer.	Modernisation of Survey techniques.
(ii) Geodetic & Research Branch. Survey of India.	IBM Card Punches-4 IBM Verifier-1	Computational work.
16. Ministry of Industrial Development	IBM Card Punches-2 IBM-Verifier-1	Input data Preparation.

D. G. T. D.

## APPENDIX IV

(Vide Paragraph 2.8)

*Replies of Ministries/Departments about the rationale for their decisions to instal computers or data processing equipment*

### Department of Space

#### (A) Vikram Sarabhai Space Centre, Trivandrum

"With the recognition of the Thumba Equatorial Rocket Launching Station as a U.N. sponsored international sounding rocket facility, it became necessary to have a computer to handle pre-launch and post-launch computations for sounding rockets launched from there. The Hydrometeorological services, U.S.S.R., gifted in 1962 a Minsk Computer to TERLS for the purpose. With the increased number of launchings from TERLS, in 1969, it became necessary to expand the system with additional equipment.

The Vikram Sarabhai Space Centre is the National Centre for research and development in the field of space technology. In the course of its research and development activities, it has to handle various types of problems in aero-dynamics, structural engineering, propulsion control and guidance systems etc. which can be tackled only with the help of computers. Upto 1971, the Space Science and Technology Centre (which has now become part of VSSC) had to make use of the CDC 3600 computer system at the Tata Institute of Fundamental Research for tackling such problems in the course of its activities. With the increase in the activities of the Centre and in the complexity of problems it had to tackle for various projects, it became unavoidable that the Centre should acquire its own computer system and hence a decision was taken with the necessary clearances from Member for Finance, Department of Atomic Energy etc. to purchase an IBM 360/44 Computer System.

As the activities at the Centre increased, the computer was unable to cope up with the computational requirements and had to be

expanded twice, once in 1974 and for the second time in 1975. With this the system would have been expanded to its maximum capacity.

A TDC-12 computer was originally obtained for a special data acquisition and retrieval research project. After the completion of the above project the computer was shifted to Sriharikota Centre and has been fully employed for telemetry data acquisition recording and quick look analysis for Aryabhata.”

**(B) Indian Scientific Satellite Project (Aryabhata)**

“Dedicated and transportable computers with 8-16K memory are necessary to process the telemetry data used for checking and testing the various electrical and electronic sub-system of a satellite during fabrication and before launch. Where there are two telemetry channels, as will be the case in the second satellite to be launched by 1977-78, it is necessary to have two computers one for checking out the low bit rate telemetry and the other for check-out of high bit rate telemetry. It was decided to purchase the indigenous TDC-12 of ECIL (8K memory)—for low bit rate telemetry check-out and PDP—11 (16K memory) of the Digital Equipment Corporation U.S.A. for its portability as it had to be taken for pre-launch check-out of Aryabhata at U.S.S.R. In the case of the second satellite the TDC-12 will be used for low bit rate telemetry and PDP-11 for high bit rate telemetry.”

**(C) Physical Research Laboratory**

“In 1962-63, a Computer Centre was established in the Physical Research Laboratory for providing computing support to the research of the Laboratory. Training in computer applications like programming, business applications, programme writing, debugging and computer languages were also organised. This Centre was equipped with an IBM-1620 data processing system.

The laboratory is required to tackle several problems during the course of its research activities, which can only be solved with the aid of computer. During the Fourth Five Year Plan period, the laboratory expanded its activities substantially in the fields of Cosmic ray Physics, Electronics, Space Physics, Theoretical Physics, Theoretical Astrophysics, Solar and Cosmic Radiation, Astronomy, High Atmosphere Astronomy and Radio Physics. It has since taken up research work also in the fields of Plasma Physics, Geocosmophysics, Archaeology and Hydrology. Over the years the computational requirements to support the expanding research activities increased considerably and it was decided in 1971, with the approval of Member for Finance, to procure an IBM. 360/44 as by then it was

found that the IBM. 1620 inspite of working at full capacity (20 hrs. per day) could not cope up with the requirements of the Centre.

With the increase in the research and development activities at the Space Applications Centre, Ahmedabad, as a result of undertaking the Satellite Instructional Television Experiment and Research and development in the important fields of remote sensing and meteorology, and Satellite Communications the demand for computer time from Space Applications Centre for both off-line and on-line usage increased considerably. At the same time in Physical Research Laboratory itself, new research groups came up requiring more computer time for the institution itself. The capacity of the IBM. 360/64 system acquired in 1971 was not equal to meet these and various other demands. Two expansions, one in 1973 and the other in 1974 had to be sanctioned with the approval of Member for Finance, Space Commission."

### **Ministry of Tourism and Civil Aviation**

#### **(A) India Meteorological Department**

"The computer was installed to meet the commitment of India Meteorological Department with regard to the establishment of a Regional Meteorological Centre (RMC) at New Delhi under World Weather Watch programme of the World Meteorological Organisation (WMO). The need to install the computer with reference to the project, as explained in the EFC memorandum submitted in 1967, is given below:—

"The time limits prescribed by W.M.O. for the preparation of analysis and prediction charts have been designed to provide the maximum benefit to different user interests, such as, aviation, shipping, etc. If prediction changes do not reach the user interests in time, the very purpose of prediction is defeated. On an approximate basis, it has been specified by W.H.O. that the distribution of charts (analysis and prediction) from RMC should be completed within 5 hours after the time of observation.

To achieve the speed of dissemination of processed information as envisaged by the WMO it is imperative that machine methods of analysis and prediction with the help of an electronic computer, are employed. The major objective of this scheme is, therefore the introduction of methods of analysis and prediction, with the help of an electronic computer at the proposed E.M.C.' "

**(B) Indian Airlines**

"Indian Airlines first went in for mechanisation in 1960 when Unit Record Accounting Machines were installed. In 1967, Indian Airlines installed their first computer to replace the Unit Record Accounting Machines. Subsequently, a second computer was installed in January, 1972 for augmenting the capacity. Both these computers are of IBM 1401 Model.

The basic philosophy on which Indian Airlines have judged the need for mechanisation has been that any job that could be done manually within the given time span should not be mechanised. It was also ensured that no staff are retrenched consequent upon mechanisation."

The change-over from the Unit Record Accounting Machines to the computer became necessary as the Unit Record Accounting Machines were slow in processing the data and could not meet the requirements of Production Planning Control, Sales Promotion through Market Research, Efficient and Reliable Advance Reservation System, Quick Turnover of funds through Credit Control ensuring minimum Inventory holding through Inventory Control methods, and so on."

**(C) Air India**

"Air India is an international airline with world-wide operations involving carriage of traffic on a variety of fares, sectors and routes. Air India's tickets are endorsable on other airlines and *vice-versa* and there are traffic pool arrangements with a number of other airlines. With such a nature of operations it is essential to have a reliable mechanised data processing system to enable providing facts and figures, accounts etc. according to a reasonable time-schedule. It is against this background that computerisation has been resorted to in Air India."

"This IBM 1460 computer system was installed in Air India in 1965. At that time, a number of accounting applications were being processed on the Unit Record Data Processing Equipment which were becoming inadequate to handle the growth of the volume of work involved. Besides, there were constant demands for enhancing the scope of automatic data processing techniques. The need rose, therefore, for a faster and larger facility to handle data processing techniques. The need rose, therefore, for a faster and larger facility to handle data processing requirements of the Corporation,

involving large volumes of input/output data. The IBM 1400 series of computers, then available in India, adequately met these requirements and there was not much of a choice in terms of different hardware available in the country at that time."

### **Department of Personnel & Administrative Reforms**

#### *(A) Union Public Service Commission*

"With the independence of the country in 1947 there was all round increase in the work in this office, especially for holding the Examinations on regular basis as well as for the recruitment to various posts by selection. All this had to be organised in a systematic way for which large number of jobs were to be produced speedily as well as according to strict schedules. It was felt that the entire work could not be done speedily and adhering to time schedule if attended to manually. A very modest start was made in August, 1948 when a very small Section of the Unit Record machines on an experimental basis for a period of two years was set up in this office by having one tabulator and one sorter on hire and maintenance basis and by purchasing two punches, two verifiers and one Alpha typewriter. In the beginning it was envisaged that only certain important items of the pre-examination and post-examination work would be done on these machines. It was correctly visualised that if the same had been done manually, these could not have completed as per schedule and perhaps cent per cent accuracy could not have been achieved. The introduction of the machines in the office served many other important purposes such as secrecy of results, reducing the gap between the dates of examinations and declaration of results, economy in expenditure and overall efficiency in work. All these factors are very important for the effective management of the work handled in this was extended by two years and subsequently, in 1952, it was decided to continue the use of these machines on a regular basis."

#### *(B) Institute of Secretariat Training & Management*

"The Estimates Committee in their 47th Report (1967-68) recommended that a Services Selection Commission|Board should be set up on the pattern of the Railway Service Commission to undertake (a) the work of conduct of examinations for recruitment to lower categories of services and posts; and (b) such of the existing functions of the Union Public Service Commission as may be of a minor nature. As the examination of the recommendation of the Estimates Committee regarding the setting up of a Subordinate Services Selection Commission|Board was likely to take time



and as the Union Public Service Commission were pressing for being relieved of the work of examinations relating to recruitment to lower categories of post the Government of India decided to transfer the work pertaining to some of the examinations from the Union Public Service Commission to the Secretariat Training School (now Institute of Secretariat Training & Management) as an interim measure.

The Controller of Examinations, Union Public Service Commission, advised that if the School were to conduct the examinations, particularly the Clerks' Grade Examination, involving as many as 10,000 to 15,000 candidates, with the degree of efficiency, secrecy, accuracy and speed, with which the Commission had been doing the work, some amount of mechanisation was absolutely necessary. The type, quantum and the source of procurement of the requisite data processing equipment were also discussed in detail with the Controller of Examinations, Union Public Service Commission, who, having regard to all the relevant considerations, practices and techniques applied by the Commission, advised that to begin with the School must acquire the following data processing equipment:—

Tabulator	—	1
Sorter	—	1
Mechanical Punches	—	4
Electrical Verifiers	—	3

Keeping in view the nature and volume of work that was required to be undertaken by the School, a comparative assessment of the data processing equipment available both with the I.B.M. and the I.C.L. was made. As a result it was found that the equipment available with the I.B.M. was highly sophisticated apart from being very costly, and was not, therefore, appropriate or suitable for the limited requirements of the School. Moreover, the Union Public Service Commission were also using the less sophisticated I.C.L. equipment/machines for their examinations work. It was, therefore, decided to instal the I.C.L. machines mentioned above.

#### Ministry of Home Affairs

##### (A) Registrar General of India

“The 1951 census was the last one in which the entire data were processed manually. The national commitment to planning led to

an immediate increase in the scope and quality of data required by government. The computer era had dawned after the war. The growing demand for sophisticated data based on different cross-classifications at different times made Indian census turn to mechanical tabulation and a small beginning was made with a unit record system for processing a part of the 1961 census data. The utility of an electronic computer in the context of census operations and analysis had been established by then. It was realised that manual operation, being only an one-time operation following pre-determined tabulation programme and not capable of any subsequent change, could not respond to the needs of diverse and sophisticated cross-classifications to meet new requirements as we went along. Storage of information contained in millions of schedules posed tremendous problems. Retrieval of data for subsequent tabulations would become schedules were processed again and again because the human factor tended to introduce bias at every stage of the operations. Once the data were fed into the computer, human bias in the form of non-sampling error could be eliminated. Computer editing of data as against manual editing was much more efficient and ensure uniformity. The computer could process data much faster. Secondly processing of data on the computer would be cheaper because the data would be on magnetic tape in a compact form, whereas manual processing would involve maintaining and handling millions of schedules repeatedly. Efficient storage, reliable retrieval, uniform cross-classification, economy and speed of such operations, were largely the factors which led to the decision to go in for electronic data processing."

(B) *Central Bureau of Investigation*

"Prior to 1963, record about crimes and criminals was being maintained in the Intelligence Bureau on a very restricted scale, on the basis of manual compilation. With the creation of CBI in the year 1963, the subject of 'Maintenance of crime Records' was entrusted to the Crime & Research Division of the Central Bureau of Investigation. The Division was to rapidly develop as a storage and clearing house of all information relating to crime and criminals in the country. In the initial stages this Division started compilation on manual basis. The system only served the purpose of collection of information and of reference when required. It was felt that the objective could be achieved better through mechanisation and adoption of modern methods of compilation and retrieval which had already been adopted by most of the European and American countries as also by Japan, Hong Kong Morocco and Aus-

tralia. This work could not be done manually because retrieval of information in manual system was so slow that was hardly of any use to the investigators. Accuracy could not be guaranteed in manual handling. However, mechanical processing and subsequent computerisation ensured accuracy also.

Work started on data processing machines in June, 1968. This mechanisation of the system of maintenance of crime records was only the first step. Since the workload regarding maintenance of Crime Records had increased considerably and what was required was speedy retrieval to help investigators all over the country it was decided in 1970 to switch over to the computers."

### **Planning Commission**

"The Planning Commission established the Computer Centre in 1965 in view of its own needs for modern computational facilities, capable of speedy handling of a large volume of data. Even earlier, considerable amount of manual processing and computations were involved in the preparation of the plans and evaluation of plan programmes. The Programme Evaluation Organisation of the Planning Commission collected a large mass of economic and statistical data every year, based on country-wide field surveys, for the evaluation of selected plan programmes. Over the years, its activities had expanded considerably, so that manual processing and analysis of the data was proving inadequate. Similarly, in the working of the other Divisions of the Planning Commission, it was increasingly becoming evident that modern computational facilities were needed for undertaking quantitative analysis, and for developing alternative complex planning models. Thus computational and data processing facilities were found necessary for performance of tasks of plan formulation, evaluation, project appraisal, and monitoring of plan projects and programmes and for developing computer-based plan information system. The Planning Commission computer was among the very first few computers installed in Government Departments. Therefore, the facility, though primarily meant for the Planning Commission, was also thrown open to the other Government Departments and Research Institutions, subject to availability of computers to facilitate data processing in the Central Government offices. The preliminary feasibility study for DGS&D data processing was made by the Department of Statistics with the help of Honeywell expert and as per their recommendations it was decided to switch over to computerisation of the data by utilising the Honeywell computer in the Computer Centre. The Central Statistical Organisation also recommended installation of essential off-line

equipment viz. 5 IBM punchers and 4 verifiers as first step for transferring data on punch cards. These machines were hired and installed in 1968."

### **Department of Statistics**

#### *Central Statistical Organisation*

"The Industrial Statistics Wing of the C.S.O. started the work of the Census of Manufacturing Industries in 1946. The initial work-load related to 4000 factories which gave rise to about 3 million entries to be processed. To tabulate these data initially two Remington Accounting Machines and electric printing and calculating machines were utilised. In the succeeding years the coverage of the factories went on increasing without corresponding increase in the staff. In 1954 December, the Statistical Cell of the Iron and Steel Controller's office along with the staff, and equipment (i.e. sorter and tabulator etc.) was transferred to this office. Since then the tabulation was done on the Hollerith Tabulation Unit.

This continued till May 1957 when the statistical cell was transferred back with its equipment. It was then found to be very difficult to meet the increased work-load (due to increase in number of factories) without the help of mechanical tabulation unit. Therefore the necessity of having our own tabulation arrangements was felt and accordingly Unit Record equipment comprising 9 punches, 9 verifiers, 1 sorter and 1 tabulator as acquired. Whether the saving in wages effected by Unit Record machines was worked out at the time of acquiring the machines initially can be stated only after consulting the old records. As these old records could not be located yet, the position in this regard will be intimated separately."

### **Department of Supply**

#### *D.G.S. & D.*

"Prior to 1962 processing of DGS&D purchase data was limited to compilation of value of orders placed and this was being done manually. In 1962 it was proposed to enlarge the scope of compilation of purchase data by breaking up into different classifications as per annexure A-1. For this purpose a set of 40 Column Power Samas Machine was installed. In 1966 the Vidyalankar Study Team recommended that in addition to the data then being maintained, the pre and post-contract processing of indents should also be taken up by the Economics & Statistics Directorate and that these data should also be processed mechanically. The implementation of Vidyalankar Study Team recommendations entailed the use

of either 80 Column Conventional Unit Records machines or the use of Computer facilities. At about this time a computer centre was created in the Department of Statistics with Honeywell 400.

### **Department of Agriculture**

#### *Directorate of Economics & Statistics*

“Data relating primarily to two schemes of the Directorate of Economics and Statistics are processed through data processing equipment. The first one relates to the scheme for improvement of market intelligence which was initiated during the Second Five Year Plan. This scheme provides for collection of weekly data on market arrivals, stocks etc. for 32 important agricultural commodities from about 1300 markets. At about the same time, there was a proposal from USAID (formerly TOM) of a gift of Powers—Samas equipment to help in speedy processing and tabulation of data collected in the Directorate. The acquisition of this equipment from 1958 onward came in handy for tabulating data not only on market arrivals but also on other items like inland movement of foodgrains by rail. The installation of the equipment was made for the purpose of speedy, timely and accurate compilation of data.

The second scheme aims at studying the cost of cultivation of principal crops in different States and was launched by the Ministry. The decision to launch the scheme was taken in 1968 and the field work entrusted to the Agricultural Universities etc. started in four States in 1970-71 and in 12 other States subsequently. Under the scheme, data are to be collected daily in respect of each of the plots of selected holdings on all the inputs including human labour—family and hired, bullock and machine labour, manures, fertilisers, seeds, irrigation from different sources, pesticides, etc. and on all the products.”

### **Ministry of Commerce**

#### *Director-General of Commercial Intelligence & Statistics*

“With a view to improving the foreign trade statistics so as to cater not only to the growing needs of Governmental and business organisations for greater details than were available in the then statistical publication ‘Monthly Accounts of the Foreign (Sea and Air) Trade of India’ (SBTA) but also to reduce the time-lag between the period to which the publications referred and the dates when they were actually published the then Ministry of Commerce

and Industry entrusted the task of elaboration of the commodity list to two of their officers who completed the revised list towards the end of 1949. This list was further revised so as to conform to the UN's Standard International Trade Classification published in June, 1951.

Under the revised trade classification, trade statistics were to be compiled and presented under 5570 commodities and groups thereof as against only 1717 items in the previous classification. Each commodity was assigned a numeric code number developing automatically in a logical order under a well-knit unified plan where grouping proceeds by suppression or disregarding of one or more right-hand side digits. The Government was keen to bring into force this revised classification; even the Planning Commission urged that for the formulation of Government Policy in regard to imports, exports & re-exports and exchange regulations, 'a correct appreciation of India's trade in as many individual commodities as possible is essential'. The estimates of cost worked out by the DGCIS on the basis of manual compilation from consolidated returns for Customs ports, involved an additional recurring expenditure of Rs. 2,90,000 (based on staff requirement calculated by DGCIS and the cost by C.S.O.) in addition to a non-recurring cost of Rs. 1,00,000 for preliminary work. The ports would also need additional staff. In order to enable them to arrive at a final decision in the matter, the Ministry of Commerce and Industry requested the C.S.O. in March 1951 to examine the proposed scheme in all its aspects viz; its desirability, scope, staff required to implement it, the use of machines for statistical work, etc.

A memorandum on the subject was accordingly prepared and placed before the Standing Committee of Departmental Statisticians and the Business Machines Coordination Committee at their Joint Sitting on the 4th September, 1951 under the Chairmanship of Prof. P. C. Mahalanobis. After a preliminary discussion of this memorandum this Committee decided that the question should be examined in detail by a Working Party. Accordingly the Working Party on Mechanisation of Trade Statistics was established under the Chairmanship of Lt. Col. J. P. Asthana, Officer-in-charge, Joint Cypher Bureau. This Working Party considered (a) the question of mechanisation of statistical processing of foreign sea and air borne trade in the office of the DGCIS and (b) the larger question of centralisation and mechanisation of the entire processing both in the Customs Houses and the office of the DGCIS. After completing detailed studies of the various issues involved the Working Party submitted their Report in 1954. While strongly recommending

mechanisation of trade data, the Working Group made the following observations:

'The present system of manual compilation of trade statistics in two stages, first at the Customs Houses and then in the office of the DGCIS, with the introduction of revised classification, be replaced by centralised mechanised compilation at one place from original documents. Mechanisation would be advantageous in respect of (a) cost (b) timelines of publication and (c) facilities for further improvement in compilation and presentation of trade statistics.' [Item 1 of Main Recommendations and Findings: Part V (P. 30) of the Report].

The above recommendation of the Working Party was the main basis for the introduction of mechanised compilation of trade statistics in this Department which was started in 1955 and became fully effective from the data for January 1957 onwards."

### **Ministry of Information and Broadcasting**

#### *(A) Audience Research Unit, All India Radio, New Delhi*

"In 1965-66, Audience Research Unit, was reorganised and 8 new units were added to the then existing 7 units. The number of Audience Research Units thus came to 15. It was also planned to have more frequent surveys at each centre. To cope up with this increased workload of tabulation, one set of IBM Unit Record Machines, consisting of 2 punches, 2 verifiers, 1 sorter, and one accounting machine was purchased. This set of IBM machines processed 80-column cards which could accommodate more information through multiple punching. The machines were purchased in February, 1968 in replacement of the Power Sams Machines—one sorter with counter, one hand-punch, one hand-verifier, which were purchased in 1957 and had outlived their utility and the normal life of 7 years and had been handling only 40-column cards.

For the first time, surveys of listerning were undertaken in the rural areas in 15 States/Union Territories. The sample size in each State was about 2000. Thus a huge quantum of data was accumulated for tabulation purposes. The Unit Record Machines were being utilised for tabulation of data of other surveys. It was, therefore, decided to get this additional data (of these surveys conducted in rural areas) processed with the help of Computer in the Planning Commission."

**(B) Central Sales Unit, Commercial Broadcasting Service, All India Radio, Bombay.**

“It was felt early in 1969 that the accounting system in the Commercial Broadcasting service should be mechanised by acquiring data processing equipment. The reasons were that besides reducing greatly the work involved in the scheduling of advertising spots, which was a recurring and regular item of work in the Central Sales Unit, the machines would also ensure the accurate billing of advertising spots and would also undertake a variety of other functions as follows:—

- (i) Preparation of Schedules in respect of stations for the broadcast of spots and sponsored programmes.
- (ii) Printing of production sheets to be supplied to individual stations;
- (iii) Monthly statements of actual broadcasts to facilitate the preparation of bills;
- (iv) Preparation of monthly bills in respect of all advertising agencies (accredited and non-accredited);
- (v) Analysis of various types of figures (tabulation of statistical information required by the Audience Research Section and the Cost Accounts Cell in the Central Sales Unit);
- (vi) Preparation of the Invoice Register (Sales Day Book).
- (vii) Compilation of outstanding statements of payments from clients;
- (viii) Client-wise ledger for immediate reference;
- (ix) Preparation of Cash Receipt Book to show immediately what amounts have been received.

The items of work mentioned above or the ones which, it was anticipated at that time, would be done by the machines.”

**Ministry of Communications**

**(A) P & T Board**

“In 1962-63, the Telecommunication Research Centre (TRC) of the P&T Department decided to acquire an electronic computer to enable TRC to take up the expanded R&D activities envisaged during the Third 5-Year Plan. There were many sophisticated areas of



research and development which required an electronic computer. The main areas were in the electronic exchanges, design of both passive and active net works (such as filters, equalisers, amplifiers etc.), traffic analysis and simulation studies in switching systems and interference calculations in microwave systems. These activities require large volume of computation and simulation with very high orders of accuracy which could be done only with the aid of an electronic computer."

*(B) Overseas Communication Service*

"In the Overseas Communications Service, Unit Record Machines are installed, for performing revenue accounting functions. There is no computer used in this department. Following were reasons for installation of Unit Record Machines in OCS:

- (a) Under the International Accounting Regulations, the rendering of forwarded accounts of foreign Administrations should be done within a period of 3 months after the completion of the month to which the traffic relates. Queries, if any, on the accounts received from the foreign Administrations are to be raised within a period of 2 months on receipt of the accounts. Prior to 1971, the revenue accounting was performed manually and was lagging by approximately 6 months.
- (b) After the introduction of satellite communication medium in 1971, a spurt of about 200 per cent was expected in telephone and telex traffic and significant rise in the telegraph traffic. The increased scale of operation had a direct impact on the work of revenue accounting which could not be performed satisfactorily on manual basis when the scale of operation exceeded a certain limit. Even if the staff strength were increased, it would not have been possible to reduce the time lag, in preparation of the accounts.
- (c) With the availability of large capacity wideband communication system, there were increasing demands on different types of statistical traffic data required for forecasting of growth, short-term and long-term network planning, equipment provisioning, financial planning and CTFA evaluations. Periodical checking of routing of traffic, balancing of traffic among foreign carriers, detection of flow of traffic abnormal routes, CTFA accounting data in prescribed proforma, CCITT|CTB statistics, etc."

**APPENDIX V**  
(Vide para 3'53)

*Statement showing the relative expenditure to be incurred in case of out-right purchase and hiring of machines*

Item	Type of equipment								
	Punch		Verifier		Sorter		Accounting Machines		
	Out-right Purchase Rs.	Hiring Rs.	Out-right Purchase Rs.	Hiring Rs.	Out-right Purchase Rs.	Hiring Rs.	Out-right Purchase Rs.	Hiring Rs.	
1	2	3	4	5	6	7	8	9	10
1. Capital outlay (Including installation and transport charges)	18,500	1,680	21,000	1,570	23,506	1,420	19,000	7,000	
2. Monthly Maintenance	143	..	236	..	215	..	647	..	
3. Monthly rental	..	319	..	394	..	424	..	3,247	
4. Total amount to be paid as Maintenance/Rental charges during a period of 9 years*	15,444	34,452	25,448	42,552	23,220	45,752	69,806	3,50,676	
5. Interest on**									
(i) Capital outlay	9,990	907	11,340	484	12,653	783	1,72,260	3,780	
(ii) Maintenance charges	4,131	..	6,818	..	6,211	..	18,692	..	
(iii) Rentals	..	9,216	..	11,383	..	12,249	..	95,806	
6. Value of expenditure after 9 years	48,065	46,255	64,666	56,253	65,600	60,204	5,75,828	4,57,502	

\*The life of a machine is normally taken to be 8-9 years. The residual value of the machine is negligible after the period.

\*\*Calculated at the rate of 6 % per annum.

## APPENDIX VI

(Vide paragraph 4.1)

*Statements showing meter time utilisation of computers in  
Ministries/Departments  
Indian Meteorological Department*

The computer was installed in May, 1973 and metering of the central processing unit could be introduced only by the end of the year. Accounting of the meter time actually utilised for processing purposes excluding time spent in routine maintenance and testing from January, 1974 onwards is given below:—

*Meter time utilisation of I. Met. D. Computer*

Month	1974			1975		
	h.	mt.	sec.	h.	mt.	sec.
January . . . . .	150	47	23	141	30	28
February . . . . .	120	28	45	203	21	00
March . . . . .	17	59	50	220	03	54
April . . . . .	179	09	34	254	26	23
May . . . . .	95	27	08	242	36	46
June . . . . .	131	48	38	244	02	01
July . . . . .	106	17	27	276	05	18
August . . . . .	158	02	05	178	02	24
September . . . . .	81	35	22	269	04	20
October . . . . .	157	38	21	227	01	21
November . . . . .	156	24	01			
December . . . . .	158	21	24			

## INDIAN AIRLINES

*Month-wise Computer utilisation during the last five years i.e., from April 1970 to March, 1975*

	System-I	System-II	Total
April 1970	235.18	..	235.18
May 1970	179.14	..	179.14
June 1970	190.69	..	190.69
July 1970	239.11	..	239.11
Aug. 1970	242.14	..	242.14
Sep. 1970	216.63	..	216.63
Oct. 1970	215.60	..	215.60
Nov. 1970	249.75	..	249.75
Dec. 1970	298.44	..	298.44
Jan. 1971	324.86	..	324.86
Feb. 1971	342.71	..	342.71
Mar. 1971	123.05	..	123.05
<b>TOTAL</b>	<b>2859.30</b>		<b>2859.30</b>
April 1971	311.96	..	311.96
May 1971	333.28	..	333.28
June 1971	261.95	..	261.95
July 1971	348.68	..	348.68
Aug. 1971	394.96	..	394.96
Sept. 1971	425.32	..	425.32
Oct. 1971	366.83	..	366.83
Nov. 1971	333.61	..	333.61
Dec. 1971	363.10	..	363.10
Jan. 1972	281.16	97.96	379.12
Feb. 1972	189.30	215.40	404.70
Mar. 1972	209.85	249.34	459.19
<b>TOTAL</b>	<b>3820.00</b>	<b>562.70</b>	<b>4382.70</b>

	System-I	System-II	Total
April 1972	216.66	214.70	431.36
May 1972	262.55	230.19	492.74
June 1972	285.98	238.73	524.71
July 1972	257.72	214.64	472.36
Aug. 1972	285.54	222.11	507.65
Se p. 1972	282.93	230.78	513.71
Oct. 1972	315.38	251.81	567.19
Nov. 1972	309.33	213.58	522.91
D c. 1972	296.00	223.98	510.98
Jan. 1973	279.00	225.35	505.15
Feb. 1973	273.00	215.29	488.29
Mar. 1973	296.70	266.12	562.82
<b>TOTAL</b>	<b>3361.59</b>	<b>2747.28</b>	<b>6108.87</b>
April 1973	283.55	264.18	547.73
May 1973	316.39	337.95	654.34
June 1973	320.06	284.62	604.68
July 1973	306.64	290.53	597.17
Aug. 1973	306.60	292.40	599.00
Sept. 1973	314.13	291.15	605.28
Oct. 1973	309.83	293.44	603.27
Nov. 1973	306.49	233.08	539.57
Dec. 1973	221.33	153.47	374.80
Jan. 1974	255.44	202.35	457.79
Feb. 1974	273.75	338.95	612.70
Mar. 1974	273.58	269.60	543.18
<b>TOTAL</b>	<b>3487.79</b>	<b>3251.72</b>	<b>6739.51</b>

	System-I	System-II	Total
April 1974	268.74	263.61	532.35
May 1974	239.25	282.02	521.27
June 1974	291.00	295.02	586.02
July 1974	275.63	306.17	581.80
Aug. 1974	224.17	311.19	535.36
Sept. 1974	250.92	325.45	576.37
Oct. 1974	267.33	362.36	629.69
Nov. 1974	278.22	343.24	621.46
Dec. 1974	311.05	357.95	669.00
Jan. 1975	309.15	328.98	638.13
Feb. 1975	298.20	316.90	615.10
Mar. 1975	314.58	342.89	657.47
TOTAL	3328.24	3835.78	7164.02

AIR INDIA

*Computer Utilisation*

Part 1: Period: January 71 to June 73

YEAR	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
1971	238.09	278.73	321.53	332.13	331.72	380.47	376.56	345.78	342.58	267.10	345.37	330.40
1972	316.26	333.48	272.38	321.58	396.80	372.09	331.39	313.20	325.63	407.32	332.96	381.88
1973	438.58	378.56	353.43	400.27	403.01	381.16						

*Application-wise Computer Utilisation*  
Part 2 : Period : July 73 to Nov. 75

Year	Month	Meter Hours for									Total	Total Clock Hours
		Revenue Reporting	Expendi- ture Reporting	Corporate Reporting	Inventory Control	Engineer- ing Informa- tion	Marketing Informa- tion	Personnel Informa- tion	Others			
1973	July	125·64	54·49	22·51	101·27	21·60	24·33	21·59	16·74	368·17	609·77	
1973	August	108·77	49·64	15·23	107·05	16·78	63·34	5·78	13·72	380·31	650·32	
1973	September	143·79	68·16	16·76	123·50	15·92	35·54	14·44	17·24	435·35	726·68	
1973	Oct.	103·14	43·53	8·02	104·95	16·79	75·87	1·52	20·61	374·43	646·83	
1973	Nov.	136·39	53·50	16·63	108·79	17·34	71·43	1·55	12·49	418·12	727·35	
1973	Dec.	131·84	63·90	19·96	111·76	14·91	40·94	1·06	9·67	394·04	677·28	
1974	Jan.	142·21	47·02	15·06	98·59	38·56	79·93	2·77	15·77	439·91	727·12	
1974	Feb.	122·48	45·00	14·48	134·60	18·02	47·80	0·58	20·34	403·30	662·91	
1974	March	160·03	66·56	14·79	120·98	20·66	46·90	3·29	22·87	456·08	728·27	
1974	April	142·14	50·77	15·63	150·41	21·59	32·57	5·38	13·16	431·65	681·71	
1974	May	105·14	46·69	11·75	119·35	29·57	66·08	0·91	17·18	396·67	671·73	
1974	June	135·20	53·99	32·15	101·63	22·75	49·72	5·82	11·70	412·96	669·75	
1974	July	160·10	51·03	23·18	78·90	18·92	40·69	5·37	20·48	398·67	714·03	
1974	Aug.	140·98	39·49	20·43	93·56	20·19	67·18	0·52	9·91	392·26	650·06	
1974	Sept.	78·54	67·65	19·26	110·08	13·28	60·42	5·95	11·08	366·26	667·02	



Year	Month	Meter Hours for								Total	Total Clock Hours
		Revenue Reporting	Expendi- ture Reporting	Corporate Reporting	Inventory Control	Engineer- ing In- formation	Marketing Informa- tion	Personnel Informa- tion	Others		
1974	Oct.	120·11	81·40	22·62	97·34	12·63	33·21	6·56	5·03	378·90	644·76
1974	Nov.	116·04	48·05	6·37	99·75	23·28	64·47	9·16	6·79	373·91	646·77
1974	Dec.	97·63	59·15	13·73	100·27	41·58	53·42	7·86	16·63	390·27	691·72
1975	Jan.	126·69	52·11	8·69	97·12	33·48	58·30	5·67	11·56	393·62	665·66
1975	Feb.	127·71	46·13	8·97	87·27	19·97	74·42	6·78	9·18	380·43	645·31
1975	March	145·69	58·81	8·46	116·93	21·06	31·98	8·10	9·41	400·44	670·92
1975	April	127·91	67·19	7·86	158·16	16·08	26·56	10·26	9·61	423·63	693·46
1975	May	185·70	59·60	8·57	108·74	12·00	54·78	7·39	6·13	442·91	694·52
1975	June	161·99	68·79	14·70	106·61	6·55	35·97	6·77	3·86	405·24	699·81
1975	July	110·28	64·43	47·07	107·47	12·00	31·20	4·57	10·62	387·64	685·35
1975	Aug.	99·45	50·54	34·40	126·17	8·02	48·04	3·03	9·49	379·14	651·98
1975	Sept.	157·64	66·83	20·10	14·55	9·78	41·20	9·73	10·11	429·94	662·79
1975	Oct.	140·06	60·43	7·93	121·80	3·75	29·84	17·06	10·35	391·22	645·06
1975	Nov.	147·11	57·56	7·91	114·80	12·42	50·03	8·55	5·53	433·91	687·24

**Department of Space**

*Actual utilisation of IBM computers at Vikram Sarabhai Space Centre Trivandrum and Physical Research Laboratory Ahmedabad in Terms of meter hours.*

**I. IBM 360/44 AT VSSC—THUMBA SINCE INSTALLATION IN JANUARY, 1972**

- (a) Application—Scientific Research  
(b) Utilisation in meter hours

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
1972	80	113	284	281	300	331	340	381	339	374	309	301
1973	312	338	405	411	437	428	400	418	338	312	382	270
1974	330	390	425	417	366	383	416	343	320	330	320	349
1975	344	361	341									

- (c) Meter hours lost for preventive maintenance—20 hours per month on the average.  
(d) Meter hours lost due to power failure or machine failure—40 hours per month on the average.  
(e) All the available meter hours excluding (c) and (d) above were utilised for Scientific Research computations.

**II. IBM 360/44 AT PHYSICAL RESEARCH LABORATORY AHMEDABAD**

- (a) Application: Scientific Research.  
(b) Utilisation in terms of meter hours.

Year.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1972							188	242	191	211	182	210
1973	210	192	205	201	310	240	301	284	286	224	305	233
1974	200	193	282	241	291	255	289	284	363	311	242	310
1975	277	322	325	315	389	325	285	234	290	333	247	355

- (c) Meter hours lost for preventive maintenance—20 hours per month on the average.  
(d) Meter hours lost due to power failure or machine failure—40 hours per month on the average.  
(e) All the available meter hours excluding (c) and (d) above were utilised for Scientific Research computations.

**Registrar General of India**

*Statement showing utilisation of computer time*

Year/month	Meter hours utilised			Meter hours paid for		Remarks
	Census jobs	Other jobs	Total (2a + 2b)	at contracted rate	concessional rate	
(1)	(2a)	(2b)	(2c)	(3)	(4)	(5)
<b>1975</b>						
January . . . . .	189·26	9·58	198·84	176	22·50	
February . . . . .	177·90	..	177·90	176	1·50	
March . . . . .	176·41	17·67	194·08	176	18·00	
April . . . . .	130·33	20·82	151·15	176	..	Shortfall of 25 hours owing to power failure and breakdown of air-conditioning.
May . . . . .	136·16	38·92	175·08	176	..	Shortfall of one hour. Reason same as in April.
June . . . . .	151·50	28·67	180·17	176	4·00	
July . . . . .	131·22	41·87	173·09	176	..	Shortfall of three hours. Reason same as in April.
August . . . . .	120·52	39·38	159·90	176	..	Shortfall of 16 hours. Owing to comparatively more card to tape operations and programme testing which records less meter hours.

September . . . .	142.43	54.60	197.03	176	21.00	
October . . . . .	112.42	66.71	179.13	176	3.00	
November . . . . .	65.86	86.84	152.70	176	..	Shortfall of 23 hours. Reason same as in August.

1974

January . . . . .	469.35	176	289.20			
February . . . . .	410.58	176	229.10			
March . . . . .	185.25	176	8.60			
April . . . . .	219.03	176	43.00			
May . . . . .	79.46	176	..			Shortfall of 97 hours. Owing to repeated power failure and break-down/close-down of air-conditioning plant.
June . . . . .	128.88	176	..			Shortfall of 47 hours. Owing to same reasons as in May.
July . . . . .	176.47	176	..			
August . . . . .	139.67	176	..			Shortfall of 36 hours. Owing to reasons as in May and comparatively more card-to-tape operations.
September . . . . .	135.68	176	..			Shortfall of 40 hours. Owing to reasons as in May.
October . . . . .	62.28	176	..			Shortfall of 114 hours. Owing to general administrative problems not concerned with computer and power break-down.
November . . . . .	157.29	176	..			Shortfall of 19 hours. Owing to comparatively more card-to-tape operations.
December . . . . .	191.60	176	15.50			

(1)	(2)	(3)	(4)	(5)
			1973	
January . . . . .	109:86	176	18:70	
February . . . . .	244:76	176	68:50	
March . . . . .	275:54	176	98:50	
April . . . . .	162:86	176	"	Shortfall of 13 Hours. Owing to comparatively more card-to-tape operations and small jobs change-over.
May . . . . .	113:32	176	"	Shortfall of 63 hours. Owing to continuous low voltage.
June . . . . .	133:62	176	"	Shortfall of 43 hours. Owing to power breakdown/close-down of air-conditioning plant.
July . . . . .	307:06	176	117:50	
August . . . . .	315:71	176	136:79	
September . . . . .	359:91	176	179:50	
October . . . . .	374:55	176	173:00	
November . . . . .	448:43	176	269:00	
December . . . . .	447:92	176	268:10	

				<b>1972</b>		
January	.	.	153.82	176	..	Shortfall of 22 hours. Owing to more programme-testing and card-to-tape operations.
February	.	.	151.46	176	..	Shortfall of 25 hours. Owing to reasons as in January.
March	.	.	208.99	176	28.61	
April	.	.	172.60	176	..	Shortfall of three hours. Owing to more card-to-tape operations.
May	.	.	155.30	176	..	Shortfall of 21 hours. Owing to break-down of air-conditioning plant and also more card-to-tape operations.
June	.	.	172.83	176	..	Shortfall of three hours. Owing to more card-to-tape operations and power breakdown.
July	.	.	128.67	176	..	Shortfall of 47 hours. Owing to reasons as in June.
August	.	.	143.09	176	..	Shortfall of 33 hours. Owing to more card-to-tape operations and programme testing.
September	.	.	118.52	176	..	Shortfall of 58 hours. Owing to more programme testing and power failure.
October	.	.	159.29	176	..	Shortfall of 17 hours. Owing to reasons as in January.
November	.	.	170.38	176	..	Shortfall of six hours. Owing to reasons as in January.
December	.	.	228.62	176	52.50	
				<b>1971</b>		
January	.	.	170.05	176	..	Shortfall of six hours. Owing to card-to-tape operations and programme testing.
February	.	.	176.00	176	..	
March	.	.	176.00	176	..	

(1)	(2)	(3)	(4)	(5)
April	124.07	176	..	Shortfall of 52 hours. Owing to reasons as in January.
May	166.69	176	..	Shortfall of nine hours. Owing to breakdown/close-down of air-conditioning plant and more card-to-tape operations.
June	151.29	176	..	Shortfall of 25 hours. Owing to more card-to-tape operations.
July	192.92	176	..	
August	228.11	176	40.51	
September	177.40	176	..	
October	205.37	176	27.03	
November	266.09	176	90.09	
December	140.56	176	..	Shortfall 36 hours. Owing to more card-to-tape operations.

### Planning Commission

Statement showing Computer time available, time utilised by Planning Commission and other Organisations from 1971 to 1975

(Figures in Hours)

Months	1 9 7 1		Time actually utilized			Time lost due to machine breakdown, power failure
	Total powered uptime	Planning Commission	System Development etc.	Other users	Total	
1	2	3	4	5	6	7
January . . . . .	345	240	16	55	311	34
February . . . . .	416	284	15	91	390	26
March . . . . .	474	315	29	78	422	51
April . . . . .	385	103	15	222	340	44
May . . . . .	375	170	16	156	342	32
June . . . . .	335	114	5	174	293	41
July . . . . .	319	94	64	120	278	41
August . . . . .	305	131	4	144	279	25
September . . . . .	282	112	13	139	264	17
October . . . . .	296	76	222	162	260	36
November . . . . .	278	60	31	168	259	19
December . . . . .	277	66	39	143	248	30
<b>TOTAL . . . . .</b>	<b>4087</b>	<b>1765</b>	<b>269</b>	<b>1652</b>	<b>3686</b>	<b>396</b>



Statement showing Computer time available, time utilised by Planning Commission and other Organisations from 1971 to 1975.

(Figures in Hours)

Months	1972					
	Total powered uptime	Time actually utilized			Total	Time lost due to machine breakdown, power failure
		Planning Commission	System Development etc.	Other users		
I	8	9	10	11	12	13
January . . . . .	302	58	26	192	276	26
February . . . . .	344	134	56	119	309	35
March . . . . .	386	213	34	120	367	18
April . . . . .	434	213	21	155	389	45
May . . . . .	318	71	34	190	295	22
June . . . . .	340	98	23	185	306	34
July . . . . .	424	173	40	133	346	17
August . . . . .	413	212	23	144	379	34
September . . . . .	482	147	..	295	442	39
October . . . . .	351	97	24	192	313	37
November . . . . .	376	136	32	155	323	53
December . . . . .	496	183	34	141	358	138
<b>TOTAL . . . . .</b>	<b>4666</b>	<b>1735</b>	<b>347</b>	<b>2021</b>	<b>4103</b>	<b>558</b>

Statement showing Computer time available, time utilised by Planning Commission and other Organisations from 1971 to 1975

(Figures in Hours)

Months	1973					
	Total powered uptime	Time actually utilised			Total	Time lost due to machine breakdown, power failure
		Planning Commission	System development etc.	Other users		
I	14	15	16	17	17	19
January . . .	462	239	35	122	396	66
February . . .	437	213	25	139	377	60
March . . .	477	212	19	203	434	43
April . . .	455	252	19	133	404	51
May . . .	461	269	52	86	407	54
June . . .	410	142	29	158	329	81
July . . .	414	174	24	157	355	59
August . . .	442	233	20	113	366	76
September . . .	427	213	47	123	383	44
October . . .	311	155	35	110	300	11
November . . .	301	102	123	56	281	20
December . . .	301	151	29	114	294	7
TOTAL . . .	4898	2355	457	1514	4326	572

Statements showing Computer time available, time utilized by Planning Commission and other Organisations from 1971 to 1975.

(Figures in Hours)

1974						
Months	Total powered up time	Time actually utilized			Total	Time lost due to machine break-downs, power failures
		Planning Commission	System Development etc.	Other users		
1	20	21	22	23	24	25
January . . . . .	292	93	45	124	262	29
February . . . . .	343	82	45	196	323	19
March . . . . .	391	94	40	232	366	24
April . . . . .	399	137	54	175	366	32
May . . . . .	387	114	42	193	349	37
June . . . . .	325	37	16	226	279	45
July . . . . .	320	79	55	156	290	30
August . . . . .	281	127	16	92	235	12
September . . . . .	277	48	18	127	193	83
October . . . . .	211	50	10	95	155	55
November . . . . .	230	114	8	66	188	41
December . . . . .	296	158	23	77	258	36
<b>TOTAL . . . . .</b>	<b>3752</b>	<b>1133</b>	<b>372</b>	<b>1759</b>	<b>3264</b>	<b>443</b>

Statement showing Computer time available, time utilized by Planning Commission and other Organisations from 1971 to 1975

(Figures in Hours)

Months	1975					Time lost due to machine break-down, power failure.
	Total powered up time	Time actually utilized			Total	
		Planning Commission	System Development etc.	Other users		
1	26	27	28	29	30	31
January	299	85	31	154	270	29
February	363	74	34	190	298	65
March	435	65	31	308	404	29
April	461	144	36	234	414	46
May	437	147	79	149	375	60
June	500	189	45	215	449	49
July	463	151	31	244	426	36
August	468	245	27	156	428	39
September	497	222	37	184	443	54
October	420	222	114	147	383	31
November	387	151	25	152	328	51
December	405	112	45	189	346	59
<b>TOTAL</b>	<b>5135</b>	<b>1807</b>	<b>435</b>	<b>2322</b>	<b>4564</b>	<b>548</b>

Note — 1. The Computer was scheduled for regular two shift operation (3600 hours in a year). Besides regular two shift operation on normal working days the computer was operated on many holidays and also round the clock or for extended hours beyond two shifts. This explains why the total powered up time exceeded 3600 hours in a year.

2. Total time actually utilized (cols. 6, 12, 18, 24, 30) is the time available for processing purposes, after excluding the time spent on routine maintenance, testing, break-down, power failure. Thus, col. 6 = Col. 2 — col. 7.

3. The figures indicated under Cols. 7, 13, 19, 25 and 31 also include the time lost in preventive maintenance.

## Computer Centre, New Delhi

Computer time utilisation Year wise by Various Organisations (Vide Reply to Question 5(b)(i))

(upto Nov.)

S. No.	Organisation	1971	1972	1973	1974	1975
1	2	3	4	5	6	7
1.	Indian Air Force	1897.33	1994.00	2084.20	2247.00	2376.35
2.	Air Force Central Accounts Office	212.25	675.00	742.55	873.30	782.50
3.	Director General of Supplies & Disposals	430.25	434.35	478.05	377.30	348.45
4.	Central Statistical Organisation (Price Index)	501.50	452.10	520.10	423.55	381.15
5.	National Sample Survey	32.05	..	..	..	..
6.	Boarder Security Force	1037.16	1877.10	1914.15	2267.45	1979.40
7.	Central Bureau of Investigation	227.45	324.30	174.30	289.10	317.25
8.	Accountant General of Central Revenues (P. F.)	280.20	371.35	354.30	543.20	597.15
9.	Assistant General Central Revenues (IRLA)	135.32	..	..	..	..
10.	Acct. General Central Works & Miscellaneous	7.00	224.50	411.40	454.20	557.20
11.	Punjab National Bank	259.15	78.55	76.50	5.40	..
12.	Home Ministry Personnel Records	38.30	54.25	128.05	15.40	..
13.	Director General Technical Dev.	161.56	390.40	312.50	87.05	152.15
14.	Central Excise	252.40	464.20	415.55	387.15	407.10
15.	Income-Tax	1235.05	1293.40	820.15	779.15	897.15
16.	Central Bureau of Secondary Education	550.35	384.00	..	..	..
17.	Pay Commission	405.35	176.35	70.20	..	..
18.	Handloom & Handicraft Export Corporation	36.30	31.10	5.20	..	..
19.	Min. of Finance (Imports) (DGIS)	194.35	270.00	280.30	140.10	237.40
20.	Min. of Finance (Pay Roll)	41.45	54.25	44.10	6.15	..
21.	Ministry of Home Affairs (Pay Roll)	120.20	86.00	53.45	4.25	..

1	2	3	4	5	6	7
22.	Ministry of Home Affairs 2-2	29.45	23.25	6.20	9.05	9.50
23.	Central Water & Power Comm. (WW)	54.30	..	..	0.25	..
24.	Central Water & Power Comm. (PW)	15.15	5.45	3.55	..	..
25.	Central Water & Power Comm. (Dam-III)	8.45	..	..	..	..
26.	Central Water & Power Comm. (Hydrology)	2.00	26.20	26.35	28.15	..
27.	Central Water & Power Comm. (Dam. I)	6.15	..	..	..	..
28.	Central Water & Power (FBTD)	0.40	0.40	0.10	..	..
29.	C.S.O. (Annual Survey of Industries)	624.12	284.00	228.55	219.10	222.45
30.	Bhakhra Nangal	26.15	19.35	7.35	10.50	15.50
31.	Director General Civil Aviation	4.10	..	5.25	2.00	2.35
32.	Central Road Research Institute	14.35	..	1.00	3.45	..
33.	Army (Technical Group)	131.55	4.55	..	..	..
34.	Army (M. S. Branch)	485.43	4.15	..	..	..
35.	Defence Service Officers Instt.	67.05	..	..	..	..
36.	Army Statistical Organisation	49.35	..	..	..	..
37.	Army (AG Branch)	195.30	3.40	..	..	..
38.	Army (C.O.D.)	222.40	220.10	112.25	82.00	..
39.	Army H. Qs. (Signals)	1.00	..	..	..	..
40.	Army (E.D.P.)	191.53	4.30	..	..	..
41.	Army (J.C.E.C.)	24.05	..	..	..	..
42.	Defence Institute (P.A.)	9.00	..	..	..	..
43.	Research & Development	235.10	165.50	5.20	..	..
44.	Army (MCTE)	11.50	..	..	..	..
45.	National Council of Educational Research & Trg.	25.50	..	..	11.15	..
46.	Indian Airlines	6.20	0.15	..	..	..

1	2	3	4	5	6	7
47.	Hindustan Aircraft Ltd. . . . .	394.55	..	154.00	..	..
48.	Post & Telegraphs (Telecom)	59.05	21.10	..	..	..
49.	Central Statistical Org.(A-I) (Dr. H.) . . . . .	1.50	17.45	..	..	..
50.	All India Radio . . . . .	15.30	16.25	12.55	19.10	22.55
51.	I.N.M.A.S. . . . .	14.05	..	1.20	0.10	..
52.	C.S.R.S. . . . .	0.55	..	..	..	..
53.	Computer Centre (Spare Parts Depot)	12.35	33.55	30.10	0.15	0.40
54.	Computer Centre (Training)	164.22	222.55	35.40	64.30	5.30
55.	Computer Centre (Systems)	17.27	25.25	38.25	32.45	55.20
56.	Computer Centre (Demos- tration) . . . . .	20.00	12.15	1.40	..	..
57.	Computer Centre (Deve- lopment) . . . . .	12.50	..	1.05	14.50	13.55
58.	Computer Centre (Engineers)	133.45	57.05	..	..	..
59.	Computer Centre (Sys- tems-DRT) . . . . .	3.55	..	..	..	..
60.	Computer Centre (Opera- tions) . . . . .	43.35	9.30	..	..	..
61.	Election Commission . . . . .	0.50	43.10	64.15	59.55	7.30
62.	Delhi Police . . . . .	0.25	3.20	12.50	..	..
63.	Joint Cypher Bureau . . . . .	0.45	..	..	..	..
64.	Chief Controller of Imports & Exports. . . . .	16.00	5.20	6.00	1.35	4.40
65.	Post & Telegraphs (B & A)	..	228.15	2270.20	3371.15	3438.40
66.	Indian Bureau of Mines . . . . .	..	6.20	94.20	59.00	..
67.	Institution of Electronic Data Processing (IEDP) . . . . .	..	17.05	19.05	..	12.30
68.	Indian Statistical Institute, Calcutta . . . . .	..	2.15	..	..	..
69.	Computer Centre (Tape Verification) . . . . .	..	125.05	110.45	103.15	89.55
70.	Computer Centre (Pay Roll)	..	4.05	..	..	..
71.	Income Tax Career Profile (ITCP) . . . . .	..	169.40	26.45	42.40	39.40
72.	Director Gen. Tech. Dev. II(EA) . . . . .	..	28.35	7.55	..	..

1	2	3	4	5	6	7	
73.	Central Water & Power Commission (Statistics)	..	0.25	22.00	15.45	2.10	
74.	All Indian Institute of Medical Sciences	..	..	93.20	..	..	
75.	Central Bureau of Narcotics	..	..	8.20	..	3.50	
76.	National Bids. Organisation	..	..	52.20	49.25	17.10	
77.	International Airport Authority	..	..	1.35	..	..	
78.	Oil & Natural Gas Commission	..	..	20.55	21.20	210.10	
79.	Indian Institute of Public Administration.	..	..	3.00	..	..	
80.	P.S.E.	..	..	0.50	5.35	..	
81.	Heavy Industry	..	..	73.45	118.05	..	
82.	Central Reserve Police	..	..	..	68.25	..	
83.	Ordinance Factory, Dehradun	..	..	..	..	8.45	
84.	Cabinet Secretariat	..	..	..	..	11.00	
TOTAL		..	11415.44	11451.20	12449.40	13316.55	13231.25



## Heavy Vehicles Factory Avadi, Madras

### Computer Usage Analysis Report

S.No.	Month and Yr.	No. of Hrs used	Inv/Plg	Prdn/Plg	Spares Plg.	Pay Roll	Costing	Misc	Remarks
1	2	3	4	5	6	7	8	9	10
1	January 72	39.90	11.07	5.98	5.98	3.99	5.98	6.00	
2	February 72	35.80	10.74	5.37	5.37	3.58	5.37	5.37	
3	March 72	45.25	13.57	6.78	6.78	4.52	6.78	6.82	
4	April 72	53.61	16.08	8.04	8.04	5.36	8.04	8.05	
5	May 72	61.30	18.39	9.19	9.19	6.13	9.19	9.21	
6	June 72	71.59	21.47	10.73	10.73	7.15	10.73	10.78	
7	July 72	69.43	20.82	10.41	10.41	6.94	10.41	10.44	
8	August 72	60.45	18.13	9.06	9.06	6.04	9.06	9.10	
9	September 72	74.20	22.26	11.13	11.13	7.42	11.13	11.13	
10	October 72	82.51	24.75	12.37	12.37	8.25	12.37	12.40	
11	November 72	71.47	21.44	10.72	10.72	7.14	10.72	10.73	
12	December 72	78.91	23.67	11.83	11.83	7.80	11.83	11.86	
13	January 73	75.50	22.65	11.32	11.32	7.55	11.32	11.34	
14	February 73	92.51	27.75	13.87	13.87	9.25	13.87	13.90	

15	March 73	95.72	28.71	14.35	14.35	9.57	14.35	14.39
16	April 73	112.61	33.78	16.89	16.89	11.26	16.89	16.90
17	May 73	85.57	25.67	12.83	12.83	8.55	12.83	12.86
18	June 73	84.30	25.29	12.64	12.64	8.43	12.64	12.66
19	July 73	88.18	26.69	13.34	13.34	8.89	13.34	13.38
20	August 73	62.25	18.67	9.33	9.33	6.22	9.33	9.37
21	September 73	68.37	20.51	10.25	10.25	6.83	10.25	10.28
22	October 73	59.82	17.94	8.97	8.97	5.98	8.97	8.99
23	November 73	90.11	27.03	13.51	13.51	9.01	13.51	13.54
24	December 73	133.18	39.95	19.97	19.97	13.31	19.97	20.01
25	January 74	58.72	17.61	8.80	8.80	5.87	8.80	8.84
26	February 74	60.65	18.19	9.09	9.09	6.06	9.09	9.13
27	March 74	99.47	29.84	14.92	14.92	9.94	14.92	14.93
28	April 74	68.57	20.57	10.28	10.28	6.85	10.28	10.31
29	May 74	72.58	21.77	10.88	10.88	7.25	10.88	10.92
30	June 74	89.77	26.93	13.46	13.46	8.97	13.46	13.49
31	July 74	107.32	32.19	16.09	16.09	10.73	16.09	16.13
32	August 74	100.48	30.14	15.07	15.07	10.04	15.07	15.09
33	September 74	76.56	22.96	11.48	11.48	7.65	11.48	11.51
34	October 74	81.66	24.49	12.24	12.24	8.16	12.24	12.29
35	November 74	79.95	23.98	11.99	11.99	7.99	11.99	12.01

1	2	3	4	5	6	7	8	9	10	
36	December 74	.	.	96.40	28.92	14.46	14.46	9.64	14.46	14.46
37	January 75	.	.	81.97	24.59	12.29	12.29	8.19	12.29	12.32
38	February 75	.	.	78.58	23.57	11.78	11.78	7.85	11.78	11.82
39	March 75	.	.	65.62	19.68	9.84	9.84	6.56	9.84	9.86
40	April 75	.	.	76.04	22.81	11.40	11.40	7.60	11.40	11.43
41	May 75	.	.	86.55	25.96	12.98	12.98	8.65	12.98	13.00
42	June 75	.	.	77.70	23.31	11.65	11.65	7.77	11.65	11.67
43	July 75	.	.	128.64	38.59	19.29	19.29	12.86	19.29	19.32
44	August 75	.	.	96.09	28.82	14.41	14.41	9.60	14.41	14.44
45	September 75	.	.	92.36	27.70	13.85	13.85	9.23	13.85	13.88
46	October 75	.	.	85.94	25.78	12.89	12.89	8.59	12.89	12.90
47	November 75	.	.	60.03	18.00	9.00	9.00	6.00	9.00	9.03
48	December 75	.	.	85.27	25.58	12.79	12.79	8.52	12.79	12.80

**Vehicle Factory, Jabalpur**  
*Statement showing utilisation of the Computer*

Month-wise	Meter used during			
	1972	1973	1974	1975
January	..	81·11	149·51	150·94
February	..	92·15	161·34	130·21
March	..	90·31	127·22	131·08
April	..	101·51	126·31	130·96
May	..	102·90	98·97	119·02
June (22—30)	3·12	132·40	109·96	140·00
July	43·01	120·50	169·21	128·46
August	36·79	114·72	123·19	174·74
September	49·88	186·09*	121·50	197·02*
October	32·46	127·34	121·98	134·32
November	45·00	115·37	84·07*	113·96
December	67·65	132·28	182·46*	192·31*
<b>Total</b>	<b>277·91</b>	<b>1396·68</b>	<b>1675·7</b>	<b>1743·02</b>
<b>Average Monthly usage :</b>	<b>45·79</b>	<b>116·39</b>	<b>139·64</b>	<b>145·25</b>

\*Above minimum Contracted 176 hrs.

## APPENDIX VII

(Vide Paragraph 6-16)

*Statement giving details of the net outflow of Foreign Exchange—IBM.*

Sl. No.	For the year ended on 31st December. . . . .					
	1974	1973	1972	1971	1970	1969
1	2	3	4	5	6	7
<i>(A) CIF Costs of Imports</i>						
1. 'AS IS' Machine Imports . . . . .	670	1557	1576	2652	1005	1035
2. Other imports by Plan . . . . .	21506	23939	10828	8722	4507	7705
3. Maintenance Parts, Tools etc. . . . .	4282	2679	2349	3009	615	646
4. Equipments . . . . .	1394	5587	2678	1030	633	829
5. Literature & Supplies. . . . .	770	334	876	1440	218	473
6. Total (1 to 5) . . . . .	28622	34096	18307	16833	6978	10688
<i>(B) Remittance of New York</i>						
7. Administration Charges . . . . .	11553	11115	8774	6452	5679	5341
8. Profits after Taxes . . . . .	14178	20471	15978	16573	9103	10278
9. Total (7+8) . . . . .	25731	31586	24752	23025	14782	15619
<b>(C) TOTAL OUTFLOW (A+B)</b>	<b>54353</b>	<b>65682</b>	<b>43059</b>	<b>39858</b>	<b>21760</b>	<b>26307</b>
<i>(D) Inflow</i>						
<b>1. Exports</b>						
(a) Inter-company Billing . . . . .	41061	33394	9380	16278	13956	14994
(b) Charges up-to FOB . . . . .	2449	841	565	395	341	593
	<b>43510</b>	<b>34235</b>	<b>9945</b>	<b>16673</b>	<b>14297</b>	<b>15587</b>

1	2	3	4	5	6	7
2. Other Exports .	315	3663	547	10	441	..
3 Service Fee .	25	185	47	2562	338	250
4 TOTAL INFLOWS .	43850	38083	10539	19245	15076	15837
(B) NET OUT-FLOW .	10503	27599	32520	20613	6684	10470

Note: S. N. (A) 4 mainly consists of imports under Customer Licences.

S. No. (D) 3 — Foreign Exchange earned for Equipment Sales outside India for equipments installed and warranted in India.

## APPENDIX—VIII

(Vide Paragraph 6.28)

### Statement Giving Details of the net Outflow of Foreign Exchange—ICL

#### I. International Computers Indian Manufacture Ltd. Bombay.

	1974-75	1973-74	1972-73
(Rs. in thousands)			
<b>A. Inflow of Foreign Exchange</b>			
1. Export of Conventional Machines. . . . .	95	73	729
2. Export of Cards . . . . .	205	20	49
3. Exports of Parts . . . . .	207	492	1340
4. Packing & Forwarding charges. . . . .	104	82	93
5. TOTAL—A(1 to 4) . . . . .	674	667	2211
<b>B. Outflow of Foreign exchange. . . . .</b>			
1. Remittance of Dividends . . . . .	379	245	245
2. Imports of Machines Parts, etc. . . . .	4592	5568	6917
3. TOTAL—B(1—2) . . . . .	4971	5813	7162
<b>C. Net outflow of Foreign Exchange(B-A) . . . . .</b>	4297	5146	4951

#### II. I. C. L. (India) Private Ltd.

A. Inflow of foreign Exchange . . . . .	NIL	NIL	NIL
<b>B. Outflow of foreign Exchange . . . . .</b>			
2. Import of spare parts . . . . .	104	258	433
Dividends net of tax. . . . .	163	..	..
<b>C. Net outflow. . . . .</b>	267	258	433

*Note* : Refund of loan availed of for import of parts & component has not been taken into account as statement is computed on accrual basis.

## APPENDIX IX

(Vide paragraph 6.36)

Letter issued in Nov. 1975 by the Reserve Bank of India to IBM  
IBM World Trade Corporation,  
Nehru House,  
4, Bahadur Shah Zafar Marg,  
New Delhi 110001.

Application for permission under Section 29(2) (a) of the  
Foreign Exchange Regulation Act, 1973.

Dear Sirs,

Please refer to your letter dated 22nd June, 1974 with which you have submitted an application under Section 29(2)(a) of the Foreign Exchange Regulation Act, 1973, for permission to carry on your existing activities in India. Your application has been duly considered by the Bank keeping in view the guidelines issued by the Government of India in December 1973, for the administration of this section.

2. The Bank is inclined to grant you permission under Section 29(2)(a) read with Section 29(2)(c) of the Act to carry on your existing activities subject, *inter alia*, to the conditions mentioned below:

- (A) The Indian branch of your company shall be converted into an Indian company, with a non-resident interest in the equity capital not exceeding 40 per cent, within a period of 2(two) years from the date of receipt of permission under Section 29(2)(a) read with Section 29(2)(c) of the Act.
- (B) Till the Indian branch is, as required by condition (A) above, converted into an Indian company with a non-resident interest in the equity capital not exceeding 40 per cent, the following conditions shall also apply:
  - (i) The manufacturing activities of the company shall be for such capacity as is approved|recognised by the appropriate authority as on 31st December, 1973, subject such additions or modifications as permitted upto that date by the press notes and notifications issued by the Government of India under the provisions of the Industries (Development & Regulation) Act, 1951.



- (ii) The branch shall not expand its business activities beyond the level existing on 31st December, 1973 or undertake any new trading, commercial, industrial activity without the prior approval of the Reserve Bank. Such prior approval will not be required in respect of export of goods manufactured by the branch.
  - (iii) The branch shall not, without the prior permission of the Reserve Bank, carry on by itself or in partnership or by otherwise associating with any others, any activity of a trading, commercial or industrial nature, other than what may be allowed to be carried on by the Reserve Bank.
  - (iv) The borrowing of any money or acceptance of any deposits by the branch, for carrying on activities permitted by the Reserve Bank, shall not be otherwise than in accordance with the provisions of Section 26(7) of the Act and the rules, directions or orders made thereunder.
  - (v) No part of the assets of the branch shall be revalued without the prior permission of the Reserve Bank.
  - (vi) You will submit quarterly reports to the Reserve Bank indicating the progress made in implementing the above conditions.
- (C) You will submit to Government of India|Reserve Bank of India within a period of 3 months from the date of receipt of the Bank's approval under Section 29(2)(a) of the Act, your proposals relating to the taking over of the assets and liabilities of your branch by the Indian company to be floated for the taking over of the business of the branch, a long with an application for issue of shares by the new company.

3. We shall be glad to know, if you have anything to say about the conditions referred to above. Your reply, if any, should be sent to us not later than 30 days from the date of receipt of this letter, failing which we will proceed on the assumption that you have nothing to say in the matter.

4. Please submit your reply in ten copies.

Yours faithfully

Sd/-

for Controller

## APPENDIX X

(Vide paragraph 6.139)

*Note on the Government's policy in regard to restrictions on the repatriation of profits by foreign companies.*

Government's policy over the years has been not to place restrictions on the remittances of profits|dividends earned by foreigners on their investments in India. The only restriction is that the foreigners should have paid appropriate Indian taxes before remitting the profits|dividends.

2. A brief outline of Government's policy towards admission of foreign capital into the country would help understand the aforementioned policy in regard to repatriation of profits|dividends.

3. Government's policy towards permitting foreign private investment in the country is of a highly selective nature. Foreign investment is for instance, not allowed in the fields of banking finance, commerce, plantations and trading or in high profit yielding industries. It is allowed only in fields where critical production or technological gaps have been identified in the country's industrial development and only where the technology involved is so scarce or crucial that it is not likely to be available on the basis of limited duration royalty agreements. Foreign investments where it is thus permitted, is also allowed generally only on a minority basis, i.e. upto 40 per cent.

4. When, therefore, foreign investment is allowed to come in only in the fields approved as well as on terms of foreign collaborations as approved by Govt. within its highly selective policy, it would not be possible to deny the remittance by the foreign investor of the income accruing to him thereon in the shape of profit. As regards the foreign investment which has come to be established without having had to obtain Government's prior permission, or which, largely for historical reasons, has gained entry into fields which would have been out of bounds to it under Government's current policy, Government have thought it better to deal with the more fundamental aspect relating to activities themselves of such Foreign Investment. Accordingly, the Foreign Exchange Regulation Act, 1973, which came into force on 1-1-1974, was enacted. In terms of Section 28 and 29 of that Act, a company incorporated abroad or an Indian

company having more than 40 per cent non-resident interest will require RBI's permission for continuing to carry on its existing activities of a trading, commercial or industrial nature or to undertake any new activities of this nature, or to act or accept appointment as agent or technical advisers in India of any person or company or to allow its trade marks to be used for any direct or indirect consideration by any person or company. The guidelines framed for the administration of Section 29 of the Act envisage that such companies will by and large be required to reduce within a specified period their foreign holding to 40 per cent or 74 per cent depending on the nature of the activities, their contribution to the economic development of the country and the merits of each case. The operation of the Act will therefore result in the dilution of foreign equity and eventually in a corresponding reduction in the outgo of foreign exchange on account of profits|dividends.

5. Government constantly reviews the policy regarding remittances and, even prior to the enactment of Foreign Exchange Regulation Act, 1973, had taken certain measures with a view to reducing the outflow of remittances on account of profits|dividends. Some of these measures are as under:

- (i) A new section 18A was introduced in the Foreign Exchange Regulation Act, 1947 with effect from 1-4-1965 and in terms of that provision foreign branches and foreign majority companies were prohibited from acting as technical and management adviser or as agents in trading or commercial fields except with the general or special permission of the Reserve Bank of India or the Central Government. The power of prior approval available under this provision was utilised to persuade the companies concerned to admit, as far as possible, majority Indian capital participation.
- (ii) Further expansion of foreign majority companies has now been restricted to those lines which are considered to be essential for the economic and industrial development of the country. Such expansion are generally allowed on the condition that the companies will issue additional equity to Indian nationals so as to dilute the foreign shareholding.
- (iii) A formula was prescribed to regulate the utilisation of reserves by 100 per cent subsidiaries for the purpose of declaration of dividends, so that only a stipulated quantum of reserves can be drawn for such purposes.

## APPENDIX XI

(Vide paragraph 7.20)

*Note on the policy for achievement of self-reliance in the field of computers.*

Computers have been recognised as a strategic sector of the electronics industry. The Electronics Commission has, therefore, been particularly keen to develop this sector on a self-reliant basis. The main elements that would contribute to self-reliance in the area of computers would be:

- (a) Ensuring that the direction and pace of advance of production capacity for computers and allied equipment, as also the availability of appropriate computational facilities both for direct use and for supporting the development of software tools, are determined by national needs, priorities, and requirements;
- (b) The key-segments of the computer industry are under national control and free from any monopolistic trends;
- (c) That a viable indigenous programme of production of computer hardware and software is built up to meet national requirements and to generate surpluses for export; and
- (d) That over a period of time, a substantial part of the technology needed for the design and production of systems, sub-systems, components and materials and also the supporting software, is generated through indigenous research and development; what is more, that such technology will be appropriate to our needs and over a period of time become contemporary in terms of international availability.

2. The Department of Electronics has taken various steps in implementing such a policy towards achieving self-reliance. One of the first tasks was the assessment of the real requirements, in terms of computer hardware and software, of various priority sectors of

computer application. The majority of computers currently in use in the country are largely data processing machines which support essentially accounting and other book-keeping functions. This was a result of the way in which the computer industry had been promoted by the foreign controlled companies. Concern for self-reliance, has led the Department of Electronics, to place the accent now, on systems which support applications that help in improving efficiency in industrial organisations in general, in the management of industrial processes in particular, applications in the areas of planning, simulation and engineering design etc. These are areas, where the application of computers will contribute to national development, rather than support merely clerical type of functions. In parallel, the Department has also organised the setting up of National|Regional Computer Centres at Bombay, Delhi, Calcutta and Madras, built around very large computers, which enable the carrying out of demanding and complex applications in the areas of national planning, large scale simulation, computer-aided design etc. In addition, such Centres not only provide maximum computing power for the investment made, but also enable the servicing of a number of users in a given area. Simultaneously, the Department also recognised the significance, particularly to a developing country like India, of the emergence, of mini-computers, as a direct result of technological advances in the field of integrated semi-conductor technology. The Department, therefore, set up a Panel on mini-computers in late 1972. The recommendations of the Panel that the introduction of mini-computers in various application-areas relevant to national development be actively promoted, has been taken up as an area for priority action by the Department.

3. As of 1971, the computer market in the country was totally dominated by multi-national companies, such as, IBM and ICL. Some of the measures taken by the Department aimed at increasing out national control of the computer industry are:—

- (a) Phasing out of 'AS IS' programme of IMB and ICL.
- (b) The Department brought the Government and the users to recognise, that, imported computers were a scarce commodity (in view of the heavy demands they made on our foreign exchange resources) and that import should thereafter be permitted only when detailed technical evaluation has shown that indigenously available computers would be inadequate for the process and computational tasks involved. This tended to make users look more posi-

tively at indigenously available systems. It also enabled the Department of Electronics to ensure that high cost computers were introduced into organisations which were dealing with priority national tasks and which were in a position to really use such computers effectively and with minimum dependence on the suppliers. With this policy frame-work accepted, executive procedures were worked out whereby import of computers was permitted only on the basis of outright purchase by the user and that too only after technical appraisal and approval of the Department, on a case by case basis.

- (c) The Electronics Commission recognised that a substantial domestic capability in the maintenance of computer hardware and software was a key ingredient in any self-reliant development strategy for computers. It also contributes significantly to attract contemporary technology into the country through a larger number of vendors offering their products for use here and thus reducing monopolistic trends that would tend to hold the country back in technology. It would also enable transfer of the designs, techniques and other features adopted in such equipments to R&D Agencies in the country. The setting up of a Computer Maintenance Corporation to undertake these tasks was approved by the Cabinet a few months ago. It is expected to commence operations by early 1976.

4. As regards, the indigenous production programme, it is expected that by the end of the Fifth Five Year Plan, the country will be able to meet practically all of its requirements for electronic calculators and mini-computers, and most of the requirements of medium-sized computers. The country is also expected to be largely self-sufficient with regard to development of software for the various applications in the country. However, requirements of large-sized computers, and for some sophisticated peripherals and components would continue to be imported even after the Fifth Plan Period. But, taken together, the indigenous production of computers at the ECIL, Hyderabad, the manufacture of mini-computers for which licensing action is currently in hand and the re-orientation of the manufacturing programmes of foreign equity companies towards meeting the national requirements of a certain range of sophisticated peripherals, are expected to result in the emergence of a genuinely Indian

computer industry directed towards the meeting of priority national needs on a self-reliant basis. The setting up of the Semiconductor Corporation by the Department which has been recently approved in detail by the Electronics Commission as also the promotion by the Department of other connectors, memory subsystems etc., are important infrastructural elements of our drive for self-reliance in the area of computers which are being pursued actively.

5. Provision of grants to R&D Laboratories like TIFR and substantial financial support to production agencies like ECIL and BEL to develop CPUs, Software and Peripherals for a family of small and medium-sized computers, which could cater not only to most of the country's general purpose computing requirements, but also be suitable for use in priority sectors, such as, Defence, Atomic Energy, Telecommunications and Space constitute important elements of the effort of the Department towards technological self-reliance. The Technology Development Council of the Electronics Commission has also been responsible for finding a number of short-term projects on the development of information systems in priority areas, such as, steel distribution, health administration, and national planning, exploring the feasibility of net-works of mini-computers etc. Encouragement has also been given to a large number of companies, both public and private to register themselves as research and development units with the Department of Science & Technology so that the base of our effort in the field of computers is broadened. Support has also been given to professional societies such as the Computer Society of India to develop programmes which facilitates exchange of scientific information between various development, production and user agencies.

## APPENDIX XII

(Vide paragraph 7.21)

*Note on R&D activities connected with computers.*

### *Design and Development in Laboratories*

1. Design and Development activity in the field of computers has a background starting from almost 1956-57. The first efforts in indigenous development activity in computers were at the TIFR, where, what was known as the TIFRAC Computer, the first electronic digital computer system designed and developed in India was operational in 1960. Since then, significant development in the D & D area have taken place, particularly over the past few years.

2. Apart from the support for D & D activity in the field of computers to ECIL & TIFR mentioned earlier viz., the development of both hardware & software for the TDC-16 & TDC-32 computer systems, the Department of Electronics has financed, through its Technology Development Council projects for the design and development of a Data Handling System for a Defence environment at TIFR Bombay, a 'Mini-Computer' and a 'Time Averaging Computer' at the Jadavpur University (which along with ISI Calcutta had earlier designed and built the ISISU computer). The Department has also approved Project Studies for the development of computer-based management information and decision making system relating to areas of cultivator, science and technology, and manpower planning, information systems, for which study teams have been set up in Delhi. These studies are a part of the preparatory work for the Computer Centre to be set up in Delhi with UNDP assistance. The Vikram Sarabhai Space Centre, has developed an X-Y Plotter, which has recently been taken on for commercial manufacture by the Kerala State Electronics Development Corporation (KSEDC).

3. The Technology Development Council of the Department of Electronics, has also identified a number of application areas such as coal, agriculture, steel, railways etc. in which feasibility studies will be launched with the active participation of user agencies and educational institutions for planned induction of digital processor and supporting instrumentation to improve production processes.



The Council is also considering development projects for new areas such as, Hybrid Computers and Array Processors. These would be of particular use in the oil industry.

*Design and Development in Enterprises*

4. Public Sector Enterprises such as Bharat Electronics and Hindustan Teleprinters Ltd. have developed, with their own funds, proto-types of certain computer peripherals such as paper tape readers, paper tape punches, and matrix type printers. The Department has also given design and development grants to BEL, through the Technology Development Council, for the design and development of more sophisticated peripherals like Card Readers, Line Printers and Magnetic Tape Transports. These development activities will be followed up by the Department to ensure the setting up of production facilities for these products on a commercial basis.

5. A number of organisations in the private sector have also been registered by the Department of Science and Technology, on the recommendation of the Department of Electronics, as being competent to undertake design and development activity in the field of computers.

These are:

- (a) Alpha Electro, Delhi.
- (b) Aluminium Industries, Kerala.
- (c) Dem Datta Products, Delhi.
- (d) Sarabhai Electronics Research Centre, Ahmedabad.
- (e) Vidyut Research Pvt. Ltd., Bangalore.
- (f) Applied Electro Magnets, Delhi.

### APPENDIX XIII

(Vide paragraph 7.25)

*Note on the need for indigenous base for the manufacture, distribution, support and maintenance of computers.*

A techno-economic analysis carried out by IPAG has pointed out that for the computer industry in particular, it would be very disadvantageous to the country in the long run to depend upon any foreign sources of supply, manufacture support and maintenance. The analysis concludes that it is within the technological capacity of the country to develop a predominantly indigenous base of appropriate technology in the country. This technology will necessarily be around mini-computer CPUs, Desk top peripherals and mini-computer networks. The following more important reasons are behind the advocacy of a national base for the industry rather than depending upon either the western countries or even the East European countries.

1. The computer industry is characterised by one of the fastest rate of growth of capital formation. A million dollar invested as capital in 1975 can multiply to about 8 million dollars by 1981 and 32 million dollars by 1985, if the foreign manufacturer is let scot-free, as was the case in the past. This represents an almost two doublings period. This indicates that invitation of capital in such an area is dangerous to the country in the long run.

2. The technology even in terms of sub-systems is available from a very large number of sources, for example for CPU, there are at least 40 independent manufacturers from whom we can buy technology if necessary. For any of the peripheral units, this number is even twice as large. "In the computer industry, there is no such thing as exclusive knowhow for which alternatives do not exist". This observation is valid for the appropriate technology decided upon for India, which also takes into consideration the question of diminishing return of the economy from over-sophistication.

3. We are paying more for the services associated with computers than for technology itself. In the final analysis, the technology cost will be less than one-third the service cost. This shows that often the technology aspect is over-played.

4. The Computer CPU industry is losing its identity because of the tremendous progress made in the Semiconductor industry. Large scale integrated circuits are available which incorporate as many as 20,000 transistors, diodes and other elements on a single chip. Technology has already been developed elsewhere which can bring products into market having close to 1,00,000 transistors, diodes and other such elements on a single chip within the next three years. Several companies abroad are in advanced stage of research for putting a million gates on a chip. The implications of this are tremendous. It means the entire computer CPU to the maximum extent required by any organisation in a country like India with as extensive a memory as is necessary, will be available as one single component. The CPU industry is therefore, dead. What remains is the Semi-conductor industry. It is for this reason, the Electronics Commission has given highest priority for starting the Semi-conductor Corporation for making such large scale integrated circuits indigenously within the country. The entire capital will be Indian and will be in the public sector. The Corporation is proposed to be started sometime during 1976 and is expected to start the first phase production within two years.

5. As to the Computer peripherals industry, the Department of Electronics has given substantial funds to the Bharat Electronics Limited, Bangalore for developing and productionising a wide variety of peripherals. We are very proud to inform the Committee that the progress made by Bharat Electronics Limited is so good that some of the peripherals already developed are as good as any imported ones. They are now working on the production of these peripherals.

6. Arguments were advanced time and again that IBM computers can be substituted by Russian and East European Computers. It is our contention that it is a security risk for the country to have over-dependence on any foreign country as far as computers are concerned. IPAG analysis has given a large number of reasons for this. However, we venture to give one typical example here. Computerisation is a path of no return. When organisations are restructured to accommodate a computer, the quality of work in various categories changes to such an extent that going back to file and pen system would be impossible in most cases. This is because, with the availability of computers more jobs will be taken up which could not have been executed with manual work. As a result of this, the organisational structure would be elevated giving scope for making better management decisions through, for example, a Management Information System. It is this factor of a one-way path that

the foreign computer sellers and manufacturers exploit. They invariably develop and sustain a distinct culture of computerisation, computer hardware and software which is difficult to be continued during expansion stage by another computer manufacture. In other words, once you decide to go in for an IBM system or an ICL system or a Russian System, there will be a intrinsic compelling factors which will make organisations to go with the same company for all times to come. This can equally apply to a conglomerate of organisations, e.g., if one of the organisations under the Ministry of Steel goes in for an IBM system, for facilitating compatibility of information transfer, there will be a constant urge to buy all other systems from the same source. This would be considered as the greatest danger to the country from foreign manufacturers, as this is a cumulative danger. It is for this reason that the Department of Electronics views computerisation based on extra national sources whether it is from the west or from the east, as most undesirable. Where the technology is necessary to be imported, it is prudent to buy this technology on a one-time purchase basis outright.

## APPENDIX XIV

### Statement showing the Conclusions/Recommendations of the Committee

S.No.	Para No.	Ministry/Deptt. concerned	Conclusions/Recommendations
1	2	3	4
1.	2.41	Deptt. of Electronics	<p>The Committee note the conflicting views regarding factors motivating the introduction of computers and other data-processing equipment in various organisations. Reconciliation between these divergent views is, perhaps, a difficult task, particularly when the subject of computerisation itself is a complex one, often even shrouded in an aura of supratechnological mystery. The Committee found, for instance, that "computers were introduced in many cases as mere status symbols and to keep up with the 'Joneses', and not with any clear-cut and calculated assessment of its benefits as an effective management tool." An expert body looking into this question of Automation (1972), pointed out that the aforesaid criticism was "not altogether unfounded", and added that 'even where the computer was introduced in order to obtain specific advantages, in most cases it was still not being efficiently used as an adjunct to a well-designed management-information system'. Another study sponsored by the Administrative Staff College, found, however,</p>

that the computer 'does not constitute a status symbol in the user organisations'."

2. 2:43

—do—

In so far as the introduction of computers and data-processing equipment in Government departments is concerned, it would appear from an analysis of the evidence discussed in the preceding paragraphs that, barring a few cases where computerisation was inescapable on account of the complexity of the applications, (as in the case of the Department of Space or the Telecommunication Research Centre) computerisation had been generally resorted to on a relatively 'ad hoc' basis without even any serious cost-benefit analysis and on an 'a priori' assumption that such equipment would improve the efficiency and speed of data-processing. Some Ministries and Departments such as the Department of Defence Production, the Planning Commission, India Meteorological Department, Directorate General of Supplies & Disposals, Central Bureau of Investigation, etc. have claimed that they had attempted some kind of a job analysis before going in for computers. The reasons offered by them are, however, essentially the somewhat routine arguments advanced by any organisation going in for sophisticated electro-mechanical gadgetry, namely, that such equipment would improve efficiency, enable the handling and processing of a large volume of data with ease, speed and reliability, and facilitate their efficient storage and retrieval. It would also be seen from the later chapters of this Report that many of the Ministries and Departments have not even been in a position to quantify, in concrete terms, the benefits expected to accrue from

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computerisation, their replies in this regard being in general terms and rather vague.

3.

2-43

Deptt. of Electronics  
Information and Broadcasting

The Ministry of Information & Broadcasting, alone among other sister organisations, have unequivocally conceded that no job analysis as such was done before acquiring the data-processing equipment for the Commercial Broadcasting Service and Audience Research Unit of All India Radio. While data-processing equipment had been acquired for the Commercial Broadcasting Service 'as per the instructions' of the Minister and the Secretary of the Ministry, the equipments for the Audience Research Unit were purchased 'to cope with the heavy tabulation work coming up at various Audience Research Units as a result of reorganisation of Audience Research'. The fact that the equipments acquired by the Commercial Broadcasting Service have not been put to use even two years after installation would indicate that there was obviously no genuine assessment of requirements, a default which the representative of the Ministry was good enough to acknowledge before the Committee.

4.

2-44

Deptt. of Electronics

The Committee have learnt from the Department of Electronics that the majority of the computers currently in use in the country are largely data-processing machines which support essentially accounting and other book-keeping functions, and that this had been the result of the way in which business in India had been promoted by the foreign-controlled computer industry. Some of the applications computerised in government departments lend clear

support to this view. This is also generally corroborated by the study sponsored by the Administrative Staff College according to which, the Indian Management is, by and large, 'not very clear about the overall objectives of computers and, in many cases, computers were acquired with a view to dealing with the immediate and specific problems'.

5. 2-45 Deptt. of Electronics  
Home Affairs

It would appear that at least in the initial stages, computers had been promoted by the companies essentially as business machines and efficiency-improving office-equipment and that in the selection of applications for computerisation and in the choice of a particular system or configuration, there had not been any positive understanding of the objectives sought to be achieved by computerisation or a scientific evaluation of how far a particular system or configuration would subserve the objectives envisaged. For instance, the Director of the Central Bureau of Investigation has deposed before the Committee that at the time of hiring the equipment, it could not be anticipated whether all the machines would be required. This is indicative of grave deficiency in working out the requirements.

6. 2-46 Deptt. of Electronics  
Home Affairs

Computers had been introduced in government departments in the past to fulfil, no doubt, certain emerging requirements, but it was done without objectively evaluating the overall needs and 'without a careful enough scrutiny of what the end-objectives are and how the computers would fulfil these'. The system acquired by the Registrar-General of India is a case in point. The Com-



mittee find that an elaborate system comprising an IBM-1401 computer and both IBM and ICL, peripheral equipment was acquired by the Registrar-General for the processing of Census data with a view to achieving efficient storage, reliable retrieval, uniform cross-classification, economy and speed. It is just not clear to the Committee why for what is apparently a one-time application it was necessary to acquire the equipment when this work could, perhaps, have been got executed through a centralised computer agency such as the Government Computer Centre.

7. 2.47 Deptt. of Electronics

In many cases, apparently, the choice of the system of configuration had also been largely left to the supplier firms like IBM, who specialised in what has now been diagnosed by the Department of Electronics as the 'discipline of spoon-feeding'. All India Radio and the Registrar General of India left the task of designing the system almost entirely to IBM engineers whose main thrust had been in the area of business applications rather than the purposes aimed at by Government. There are repeated instances of Government departments going in for equipment which was readily available, but they were lured, as it were, by the ready-made packages of hard-ware and soft-ware offered by the foreign-controlled companies operating in India. Thus, the system acquired had not been designed to suit our individual user-requirements, but whatever was readily available with the manufacturers were virtually thrust on this country on account of the sophisticated and

alluringly aggressive salesmanship of IBM in particular and the comparative technical inexperience of our individual users. This appears to be particularly true in the case of the IBM-1401 series, (of which there is a peculiar proliferation in government departments), which, by the time they were brought into India on an 'As is' basis and refurbished for being supplied to various users, were entirely obsolete and had outlived their utility elsewhere in the world.

8.        2.48        —Do—

The Committee have also been informed by the Department of Electronics that while working out the financial implications of computerisation, the technological alternatives had not been critically gone into. The analysis made in this regard by the Information Planning and Analysis Group (IPAG) of the Electronics Commission is revealing. The analysis has shown that at the time of installing an IBM 1401 system or ICL 1901 system in the country, equivalent mini-computers were available with the same capacity at a cost which was half the cost in 1970, one-third the cost in 1972 and one-fourth the cost in 1974. In 1975, a computer slightly more powerful than the IBM 1401 was available at a cost as low as \$1200 for a 4000 word memory Central Processing Unit, as compared to the price of IBM 1401 of equivalent configuration of \$20,000 or more. Thus, it would appear that little or no attention had been paid in the past to this important aspect which could have, perhaps, resulted in the acquisition of equally capable equipment at much lesser cost.

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9.	2:49	Deptt. of Electronics	<p>The Committee would like to draw pointed attention to the thoughtful and perceptive observations made by the representative of the Department of Electronics in his evidence before the Committee:</p> <p style="padding-left: 40px;">“The main point is that we have had to pay substantially more than otherwise would have been the case if we had paid dedicated attention to this area and shown something like the kind of interest and effort that the multinationals themselves put in terms of their marketing strategies and development.”</p>
10.	2:50	-do-	<p>In evaluating the need for computerisation, the Committee feel that it would be wrong to ignore another aspect which is the social cost of computerisation as well. While the Committee are sensible that our country must take every possible advantage of modern scientific advance and technological innovation, they would stress that in an economy such as ours, where the problem of unemployment is large scale and of serious proportions, the use of computer and other sophisticated machines for traditional labour-saving applications may not be desirable or even expedient. The common argument that computers lead to efficiency which in turn leads to profits, larger savings and faster economic growth is, perhaps, valid only from a long-term point of view, while the use of computers for predominantly labour-saving applications can well result in con-</p>

tracting the employment opportunities. It is unfortunate that adequate attention has not been paid to this important aspect in the past. The Committee desire that Government should invariably take into account the social cost of computerisation and evolve a principled and positive approach for the selection of areas for computerisation on an over-all judgment in the national interest.

11. 2.51

-do-

What causes grave concern to the Committee is that, prior to 1970, there was no clear institutional mechanism within Government for co-ordinating the computer requirements of different Government departments/agencies and even for evaluating the justification for computerisation. The absence of an explicit policy-frame and well-defined criteria in regard to the areas and applications in which computers could and should be introduced further aggravated the situation. Even after 1970, the Department of Statistics, entrusted with the responsibility of co-ordinating the purchase and hire of computers by Government departments, and of evaluating the requirements of user departments and ensuring proper utilisation of computer time, was, as pointed out earlier, not adequately equipped to consider these technological aspects. Now that the Department of Electronics has been entrusted with most of these vital responsibilities as a unifying agency, the Committee trust that there would be a more integrated and co-ordinated approach towards the entire question of computerisation in Government departments.

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12. 2.52 Deptt. of Electronics

The Committee are unable to appreciate why the responsibility for scrutinising requests for computers could not be entrusted to the Department of Electronics some years earlier as this Department had come into being in 1971. Moreover the Department of Electronics had already been entrusted with the responsibility for scrutinising the applications for import of computers into the country and this could have easily been extended to cover scrutiny of requirements for purchase/hire of computers by Government departments/public undertakings from the multi-nationals functioning in the country. Had this been done there would perhaps have been a truly knowledgeable and critical scrutiny to ensure that the computers were purchased only where indispensably required in the larger public interest and also on the most competitive rates.

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13. 2.53 —do—

The Committee find that the Department of Electronics has so far been designated as the nodal point for scrutiny only in respect of Government departments. The Committee stress that all requests for introduction of computers above a certain value, whether in the public or private sector, should be got scrutinised by the Department of Electronics which has the requisite expertise to make sure that such computerisation would subserve the larger public interest.

14. 2.54

—do—

The Committee are glad that the Department of Electronics are no longer just content with accepting the merits of a readymade machine which the Multinationals successfully marketed through their usual deft salesmanship, but are now trying seriously to identify the areas and problems where the use of the computer would really be an aid in taking correct decisions after evaluating all the complex factors. Since the user Departments have hitherto got used to a certain amount of what might be called spoon feeding by the Multi-nationals, it is necessary that a close watch is kept centrally by the Department of Electronics to ensure that the Departments identify precisely and carefully the problems and areas proposed to be tackled by computerisation and also spell out the benefits which would accrue from computerisation.

15. 2.55

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As regards the criteria to be followed for the scrutiny of computerisation proposals from different Government departments, the Committee note that certain broad principles have now been evolved by the Department of Electronics, and that certain priority areas of applications which are export and production-oriented and would make for conservation of resources, foster indigenous development and R&D, etc. have been indicated.

According to Government the use of computers is primarily to be made in industrial process control, designing, scientific calculations, inventory control, defence system etc. Computers are also envisaged to be used for the process-oriented type of applications

where they support essential improvements in industrial outputs in terms of controlling the process or improving the quality of the product and improving the through-put of the process areas.

In sum, the Committee would like a more precise policy and objective criteria for computerisation in Government Departments to be evolved soon by the Department of Electronics so that a national line on this issue could be laid down for principled implementation.

16. 3.90 Deptt. of Electronics

The Committee regret that their examination of this wide-ranging issue has brought out some distressing features. Except for a few instances, almost all Departments had purchased computers/data processing equipment directly and not procured them through the Director General of Supplies and Disposals, although the General Financial Rules and the provisions of the Manual of the Director-General of Supplies and Disposals, required such procurement to be made through DGS&D only. One of the common explanations advanced was that the computer and other data processing equipment obtained by the user Departments having been of a proprietary nature, it was not considered necessary to route their requirement through the DGS&D. The Secretary, Department of Supply, however, was good enough to go on record before the Committee that even in the case of 'proprietary items' the user Departments should have asked DGS&D to procure it. The

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Secretaries of the Departments of Supply, Foreign Trade and Expenditure have also conceded that it was a mistake on the part of the user Departments to have ignored the existing procedure and they should not have resorted to direct procurement from the supplier firms, without seeking special exemption from DGS&D.

17. 3-91 Deptt. of Electronics

Another somewhat disconcerting feature of the multi-facet story of Government's acquisition of computers is that barring a few Ministries all others had procured the computer/data processing equipment without floating any tenders on the plea that such items were of a proprietary nature. The exceptions have been (1) The P&T Department who obtained the computer from Elliot Bros. after floating global tenders (2) Chief Controller of Imports and Exports, (3) Overseas Communication Service, (4) Department of Commercial Intelligence and Statistics—whose tender enquiries, however, were restricted only to International Business Machines and International Computers Ltd. The Committee recall that during evidence, the Secretary, Ministry of Communications vouchsafed his opinion based on the experience **gained** in their own purchases, that by inviting global tenders better terms than those **given** by International Business Machines could have been obtained.

13. 3-92

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Another significant lacuna noticed by the Committee is that whereas under the General Financial Rules the Ministries are expected to route their purchases through DGS & D, they do not, in cases of hiring, have to go through that filtering process. Several Departments of the Government were seen to have hired computers/



data processing equipment by direct negotiations with the suppliers. This happened in spite of the view of the Secretary of the Department of Supply that hiring was inter-linked with the economics of purchase and it was desirable to entrust both these activities to DGS & D.

19. 3-93 Deptt. of Electronics

From the information furnished by various Departments it appears that except for a few recent acquisitions reliance has been placed almost entirely on the western countries and the markets in the socialist countries have not been adequately explored. The representative of the Department of Electronics during his evidence admitted that this had perhaps been due to gaps in the information available to Government till 1972 about computers/data processing equipment that could be procured from the USSR. This does not seem particularly valid, since Indo-Soviet relations have been growing over the years and a Soviet computer appears even to have been presented to the Indian Statistical Institute during the fifties. It is needless also to point out that purchases from the USSR and the socialist countries of East Europe had the additional advantage of being covered by bilateral trade agreements. The Committee trust that the Department of Electronics will in future, while processing the requisitions for procurement of such computers|data processing equipment for Government Departments as are not manufactured within the country, would explore the possibility of importing them

on competitive terms from countries including USSR and other socialist countries.

20. 3.94 Deptt. of Expenditure

The representative of the Department of Expenditure in defence of the procedure followed by the Departments in purchasing/hiring computers, data processing equipments etc. directly from IBM/ICL stated during the course of evidence:

“If we now consider that they did not have enough knowledge of computer technology or that they did not know computer software well enough and they allowed themselves to be spoon-fed by IBM salesmen, the Finance Ministry was certainly in no better position to adjudicate between one proposed computer system and another.... By hind sight or better analysis now we say that if in 1968 a suitable group of computer specialists had been got together to analyse the alternative software systems and then gone out to a world bid and taken an Italian or British computer, we might have saved 50 per cent of the money over the period. It is in that way that the Committee notices a lapse. If that is so, I think this must be true, but the amounts involved though substantial were not so large that in every case it was necessary for such an elaborate procedure to be adopted to find out possible alternative world sources.”

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21.	3-95	Deptt. of Electronics	<p>While the representative of the Ministry of Finance may well feel called upon to defend the action taken by his predecessors, the fact remains that there have been many serious loopholes in the matter of processing the requests of Government departments  Ministries organisations for acquisition of computers, data processing machines etc. Quite a number of such examples have come to the notice of the Committee, only a few of them being mentioned below:</p> <ol style="list-style-type: none"> <li>(1) As already mentioned in Chapter II no clear-cut guidelines for determining the necessity or otherwise of computer, data processing machines etc. had been laid down. The result was that justifications were prepared and processed in an 'ad-hoc' manner with the result that 'captive' computers have come to be procured for departments/ Ministries where the work-load hardly justifies them: e.g., Registrar-General of India, Heavy Vehicles Factory, Avadi; Vehicle Factory, Jabalpur etc. (For details please see Chapter IV).</li> <li>(2) The feasibility of utilising the facility in a common computer centre, or in conjunction or in association with other user departments does not appear to have been critically gone into. For example, the requirements of U.P.S.C. and the Institute of Secretariat Training and Management,</li> </ol>

New Delhi (which work under the Department of Personnel) could have been served by one data processing facility.

- (3) The requirements were not spelt out in broad specific terms to facilitate determination, by an expert Government agency|department, the number and type of units including data processing equipment, software, etc. which should go to make up the computer system so as to minimise the capital and recurring cost.
- (4) The Government departments did not take any concerted or determined measures to go into the reasonableness of the terms of agreement for purchase|hire of computers as offered by IBM|ICL. In this context the Committee would like to point out the astonishing instance where the charges for computers were allowed to be specified in American dollars with the result that heavy amount of Rs. 20 lakhs had to be paid by the Railways and other Government departments after devaluation of the rupee in 1966 till the position was rectified in 1968 at the instance of the Comptroller and Auditor General who had insisted that the charges should be expressed in terms of Indian currency. This was a glaring example of an expenditure which could and should have been saved by the exercise of proper care and forethought.

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22.	3-96	Deptt. of Electronics	<p>The Committee desired to know whether the reasonableness of the terms offered by IBM ICL had been gone into by the Departments before signing the Agreements. Replies received from some of the departments frankly admit absence of any such scrutiny. For example, the Department of Commercial Intelligence and Statistics stated: "No attempt has been made in the past to examine in detail the reasonableness of the terms and conditions of the contract before the agreements were concluded. The terms and conditions of the supplying firms have been accepted since it was said that they were the same to the customers throughout India." The Overseas Communications Service has stated: "No legal opinion was sought for before entering into the agreements with IBM. At that time it was not considered necessary to do so on the basis that other users Government Departments and Public Sector Undertakings had accepted similar standard terms and conditions offered by IBM". The DGS&amp;D has stated: "There was no attempt made to examine in detail the reasonableness of the terms and conditions."</p>
23.	3-97	-do-	<p>It was therefore only natural that the powerful multinationals should have taken full advantage of this extraordinary complacency and apathy on the part of the user Government Departments. Apparently, the aggressive and also skillful salesmanship of the formidable multinationals persuaded them to go in for hiring of computer system, the hard core of which largely consisted of outmoded</p>

and used machines in 1401 series which were only spruced up and refurbished and hired out at a fabulous margin of profits. The Committee would like to point out that when the Railway Board in 1974 and 1975, in pursuance of the recommendations of the Public Accounts Committee, took up seriously with IBM the revision of hiring charges for the computers, they were able to effect, to begin with, a reduction in annual recurring rental charges to the extent of Rs. 11 lakhs in November, 1974, followed by a further reduction of Rs. 19 lakhs in May 1975. This is a pointer not only to the Railways earlier lack of care but also to the fact that by a meaningful and determined effort, Government, which had at its disposal the expertise of the Department of Electronics, the Electronics Corporation of India, Research Institutions, and the Cost Accounts Branch of the Ministry of Finance, could and should have been able to fix reasonable charges for acquisition of computers right in the beginning and avoided the costly lapses which have burdened the country's exchequer.

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24.

3-98

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While examining the representatives of the Government Departments on the pros and cons of hiring vis-a-vis purchase of computers, data processing machines, the Committee came to know of certain apprehensions voiced by the User Departments. For example the Overseas Communications Service has stated that "the capital investment on outright purchases is too high", while DGS & D have drawn attention to "budgetary restrictions" as a reason for hiring the machine.

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25.	3-99	Deptt. of Electronics	<p>The representatives of the Department of Electronics hinted at larger problems when he stated during evidence that "hiring seems to be an expense which can be incurred whereas investment on computers by outright purchase calls for certain additional levies etc. in terms of taxes". While this question cannot at this point be discussed at any depth, the Committee are of the view that the Ministry of Finance should have taken critical note of whatever fiscal constraints were there and should have sought to resolve them to the extent possible.</p>
26.	3-100	-do-	<p>The attention of the Committee has been drawn to the expertise required for keeping the computer system in serviceable condition and the high cost demanded by the multinationals for spares. The Committee feel that if Government had taken serious note of these and other allied difficulties it should have been possible, with the help of the Department of Electronics Electronics Corporation of India, to devise suitable servicing arrangements as most of the computers in operation are supplied by one company and are located in Delhi. It should not have been too difficult also to persuade the multinationals with the help of factual data about the imported cost of spares, to charge no more than reasonable prices for the parts required.</p>

27. 3·101 -do- The Committee would like Government to take concerted measures without further delay, so that all constraints in the way of a rational decision about the purchase, instead of hire, of computer systems are eased out in the country's interest.
28. 3·102 -do- One of the chief arguments given in support of the concept of hiring is that the machine could be replaced at any time or dispensed with. This provision in the Agreement should be put to effective use by undertaking a critical review of the use to which the existing computers, data processing equipment, etc. have been put. The Committee have elsewhere recommended that computer and other sophisticated machines in a situation like ours should be pressed into service only where these are required in the interest of scientific advancement or technological and production gain but never merely as a labour saving device.
29. 3·103 -do- The Committee, therefore, urge that the use of computers, data processing equipment, etc. may be given up where it does not conform to the afore-mentioned criteria. Where, however, the equipment is required in the larger public interest, a detailed analysis should be carried out about the units required for working the system. The effort should also be to procure computer, data processing equipment, etc. from public sector units, (e.g., the Electronics Corporation of India) who have already developed a fair amount of capability in manufacturing and marketing such equipment. In this context the Committee would like to draw attention to the
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well-known fact that there is still a high margin of profit available to the multi-nationals in the peripheral and supporting equipment. The Committee need hardly point out that with the advancement of knowledge as well as what is termed 'know-how' and technical capability in the country, it should be possible to replace, largely if not entirely, at least the data processing equipment and other peripheral and supporting equipment by that of indigenous manufacture, preferably from the public sector.

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3-104

Deptt. of Electronics

Where, however, it is not possible to replace the equipment by indigenous production, Government should examine in depth, with the help of the Department of Electronics and the Ministry of Finance (Cost Accounts Division), whether it would be more advantageous to purchase the needed equipment outright rather than hire it. Wherever it is found necessary to purchase the equipment outright, it should be procured from indigenous firms as already recommended earlier. But where it has to be imported, tenders should be invited from well-known and reliable suppliers of proven standing. Competitive quotations should be called for before selecting the best equipment on the basis of performance, economics, etc.

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31. 3·105 -do- Where it is considered desirable to continue to retain the equipment on hire, the terms should be most carefully scrutinised with the help of the Department of Electronics and the Ministry of Finance (Cost Accounts Division) so as to secure the most competitive rates. As mentioned earlier the Railway Board have been able to re-negotiate the terms for hiring of computers and equipment with the IBM in pursuance of the Committee's recommendations and thereby secured a significant saving of about Rs. 30 lakhs per annum.
32. 3·106 -do- The Committee would like to be informed of the precise action taken in pursuance of these recommendations in respect of computers, data processing equipment, calculating machines, etc. which are in operation in various Government Departments|Ministries.
33. 3·107 -do- The Committee stress that Government should issue clear guidelines to the effect that all future requirements for computers, data processing equipment, etc., would first be got examined in the Department of Electronics with reference to the criteria laid down. Where it is considered absolutely essential in public interest to go in for computers, data processing equipment, etc., these should be preferably procured from the public sector units and failing that from indigenous firms. Where computers, data processing equipment, etc. are to be purchased or hired from a multi-national, this may only be done centrally by the Department of Electronics who may be assisted suitable by the Cost Accounts Branch of the Ministry of Finance.
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4.35

Deptt. of Electronics

The Committee had learnt, with some consternation, in 1974 that the utilization of computers in the Railways was far less than originally envisaged and that the computers were not subserving the objectives with which they had been acquired. After scrutinising the action taken by the Railways in pursuance of their recommendations, the Public Accounts Committee observed in their 165th Report (April, 1975):

“Keeping in view the wider ramifications of the purchase or hire of computers etc. from these companies and the unsatisfactory utilisation of these machines as has been revealed by a study of the Railways’ computerisation projects, the Committee desire that the Ministry of Finance should immediately set up a committee of experts to examine how far the Government Departments which have incurred huge expenditure on acquiring these costly machines have been able to put them to worthwhile and adequate use.”

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The representative of the Department of Electronics stated during evidence in December, 1975, that the question of constituting the aforesaid Expert Committee was still, howsoever, “actively”, under consideration. The Committee have not yet been vouchsafed the final action, if any, taken in the matter. They are thus driven to

reiterate that the Expert Committee should be constituted forthwith and should include, apart from experts in the field, a representative of the Cost Accounts Branch of the Ministry of Finance and at least one highly competent and independent person well-versed in the use of computers and data-processing machines by Government for administrative, organisational and other related purposes. This Expert Committee should examine in depth the justification for the computers, data processing machines etc., in use in each of the Government Departments, organisations etc., and suggest concrete measures to bring about efficient working, rationalisation and economy. The Committee would like to be informed without delay of the concrete action taken in pursuance of this recommendation and also the results achieved.

35. 4.36 -do-

The Expert Committee will be expected to evolve guidelines and check lists in order to ensure that at least in future the requests for acquisition of computers, data processing machines etc. would be examined critically in the light of the guidelines before decisions are taken.

36. 4.37 -do-

The Committee emphasise that the Departments|organisations desiring to acquire computers, data processing equipment etc. should make a thorough preparation of their case by identifying in detail the projected tasks and assignments, as well as organising the data to be fed to the computer and training of staff etc. so that the computers, data processing equipments etc. could become effective

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immediately after acquisition. It is also necessary to have a perspective plan to ensure the optimum utilisation of computers, data processing machines etc. on a long term basis.

37. 4.38 Deptt. of Electronics

The Committee stress that there should be a built-in arrangement in the department, organisation etc. for periodical evaluation of the actual use made of the computers, data processing machines etc. with reference to the hypotheses and parameters on the basis of which they had been acquired. This review should be carried out at least once a year, so that timely remedial measures wherever required, could be facilitated. There should be no hesitation in giving up the use of a computer, data processing machine etc. where the logic of experience warrants it or where the work could be done more economically by availing of the facilities in a Computer Centre or in another Government department organisation. It should have also been possible to quantify the gains in financial terms as far as possible and to compare them with the parameters which had been assumed at the time of acquisition of computers, data processing equipments etc. That their continued use could and should be determined with reference to the cost benefit factor is a point which should not be lost sight of.

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The Committee are glad that the Department of Electronics are encouraging the setting up of Computer Centres in metropolitan as well as Regional sites. As these would be medium|large-sized computers with a wide range of capabilities, it is necessary that there should be meaningful coordination between the computer centres and the users, particularly those belonging to Government and the public sector, so that the information and input and output systems in the computer centres are made to sub-serve the best and widest public interest. The Committee reiterate that they look to the computer not just as a labour-saving device but as an instrument, indispensable in the modern context, of upgrading organisational capability to take well-informed and vitally productive decisions after taking into consideration the present-day multiplicity of relevant factors. For example, there could be highly significant computer study and analysis of our exports and imports with reference, particularly, to the efficacy of incentives given to increase exports of manufactured products and to export goods to new markets, and also the inter-related subject of dis-incentives for imports, so that the country could accelerate the achievement of a self-reliant economy. There could also, similarly, be studies to evaluate the impact of various economic and fiscal measures on the development of the economy in various sectors, so that Government could have useful and timely information on which to base appropriate action. The Committee note that the Department of Electronics have already taken some initiative in the matter of developing an information system in various fields, such as coal, steel, manpower planning etc.

39. 4.40 Deptt. of Electronics

The Committee would very much like a closer co-ordination between the Department of Electronics and the user Departments. This should help to identify in depth the relevant requirements, particularly those which have a bearing on planning and development and concern more than one department. It may be worthwhile to classify these requirements broadly under three heads:— economic administration, social administration and general administration. There could be compact groups consisting of the representatives of the Department of Electronics and the Departments concerned, so that they could identify the areas requiring computerisation after mutual exchange of ideas and programmes. Similarly, the requirements of computers for the public sector could perhaps also be identified on a sectoral basis with the help of the Bureau of Public Enterprises.

The Committee consider it important to stress that it is only when there is meaningful coordination between the user departments and the Department of Electronics/Manufacturing Units that a computer system programme can be properly designed to serve the public interest in the best way possible, and to avoid the waste, which so often occurs, of the country's talent and treasure.

40. 5.35

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The Committee attach great importance to the data-security aspect involved in computerisation. So long as the leakage of information was possible only through men data security did not pose so very much of a problem. But with sophisticated instruments which can be remotely controlled or with components which can store information several times more than the normal human brain can, the dangers to data-security have become far-reaching and almost frightful. Today, it seems, in most of the Government Departments we generally have what is known as 'batch processing systems'. But in the not very remote future we would be having information system inter-connected with each other or system with multiple access. These new facets of technological change are bound to pose peculiarly complex problems of security. The Committee would urge that immediate attention should be given to this problem and Government should make sure of an adequate awareness in all sensitive Departments about the paramount importance of data-security, and also the provision of the essential wherewithal to counter all threats to it.

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41. 5.36

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The Committee note that there are enough monitoring safeguards to check against unauthorised transmission through the gadgets surreptitiously installed in our computers. But as pointed out in paragraph 5.1 the possibilities of such leakage cannot be completely ruled out. Several other subtle methods by which access to the information can be had have been enumerated in the aforesaid paragraph. The Secretary, Department of Space himself told the Committee that "the overall possibility of the espionage or intelligence



42. 5.37 Deptt. of Electronics

gathering without the knowledge of other people is really fantastic in electronics, there is a large electronic-magnetic spectrum from which you can gather this information".

The Ministry of Defence, and the Department of Space who have also installed computers, informed the Committee that they had taken special steps to screen the persons employed on operating computers. The Committee are not sure whether similar screening is being done by other Departments handling information of a sensitive nature. The Committee feel that such screening is necessary not only in the Departments of Defence and Space but in other key Departments also. Government should take adequate care and issue necessary instructions in this regard. The Committee were informed by many Departments that they had their own personnel for maintenance. But in those cases where the computers had been hired and the maintenance was being done, for example, by IBM, the representative of the Department of Electronics acknowledged the danger of a foreign manufacturer's employee becoming friendly with their personnel of the computer with a special motive and worming his way to the information.

43. 5.38 —do—

About IBM, the Secretary, Department of Space, made a pregnant observation: "in the last 5 years or so we have been fairly aware of the difficult position in which the IBM has been able to place the various parts of the world". Alluding to IBM, the representative of

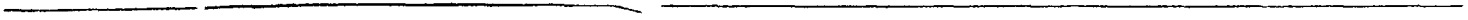
the Department of Communication, had similarly to say: "regarding any international organisation of this type which is foreign without mentioning anything specific it can be said that we would not be surprised if we come to know that some foreign multinational corporations which are operating in our country adopt certain methods which are not in our national interest". In the light of these observations and in view of the fact that the country continues to largely depend on foreign companies in the computer field the Committee's anxious concern about the security aspect will be appreciated.

44. 5.39 Deptt. of Electronics  
M/Home Affairs

This concern has been accentuated by the fact that there appears to have been no coordinated thinking from the security angle, on the part of the agency of Government dealing with security, namely, the Ministry of Home Affairs. The Home Secretary had simply stated that each Department was supposed to take necessary measures from the security aspect. This is a rather airy observation, least expected from the Home Ministry. The Committee are of the view that the Ministry of Home Affairs should have taken continuous interest all these years in this vital matter and should have been in a position firmly to reassure the Committee that data in our sensitive departments at least were being rigorously and fully safeguarded.

45. 5.40 —do —

The Committee note that the Department of Electronics are exercised about the problem of ensuring security of information and are considering actively the setting up of a panel of specialists to advise the Electronics Commission on this issue. The Committee wish this panel of experts to be constituted without delay. The panel



of experts may co-opt representatives of the Ministries of Home Affairs, Defence etc. so that all relevant aspects can be taken into account while devising foolproof measures to guard against data falling into unauthorised hands. The Committee would also like to refer in this context to the statement made by the Department of Electronics that it was technologically possible to instal hardware and software keys with the help of local computer engineers on imported systems in order to obviate chances of leakage of data to unauthorised persons. The Committee would like Government to consider whether these technological devices should not be installed straightaway on the imported computer system working in the sensitive Government Departments so that no risks are taken with data-security.

46. 5.41 Deptt. of Electronics

The Committee would urge that the Department of Electronics should take a lead in encouraging research studies to increase knowledge and understanding of the security of Computer System, more specially the computers which have either been taken on hire from multinationals or which have been imported. The Department of Electronics should have a cell which would provide computer users and indigenous computer manufacturers with information and guidance about security measures.

47. 5·42 —do—

The Committee understand that the subject of preserving confidentiality of information, particularly concerning individuals, so that it is not mis-used by unauthorised persons, has been attracting the attention of a number of countries like Germany, France, United Kingdom etc. In U.K. two white Papers on "Computers and Privacy" and "Computers: Safeguards for Privacy" have been brought out during the last two years. The Committee suggest that the developments in U.K. and elsewhere may be studied by the Department of Electronics and perhaps also utilised in whatever ways might be thought appropriate.

48. 6·146 —do—

The Committee find from an analysis of the operating revenues of IBM & ICL that machine rentals have been the principal sources of their revenues in India. In the case of IBM, the percentage of machine rentals to the total operating revenues ranged from 53.39 in 1974 (Rs. 12.57 crores) to 61.10 in 1969 (Rs. 6.12 crores). So far as, ICL is concerned, the percentage of machine rentals to their total income in 1975 was 62.25 (Rs. 4.91 crores), and that for 1974 stood at 59.12 (Rs. 4.07 crores). Further major item in the revenues of these companies is the charges on account of data processing. About 9 per cent of the total income of IBM in 1974 was derived from this source.

49. 6·147 —do—

The Committee have elsewhere in this report commented on the thoughtless manner in which the machines were taken at exorbitant rent by Government departments and other users. It is strange that Government took no steps to ensure that machines which had been largely brought in on what is called 'As is' basis and being of negli-

gible value had to be somewhat refurbished could at least be acquired by the users at reasonably lowered prices or were hired on commensurate rentals. The Committee feel that if this elementary care had been taken and the rentals fixed on a rational basis after taking into account the import price, the estimated cost of refurbishing, the life of the machine (with particular reference to the depreciation claimed from Income-tax authorities) and also the fact of reasonable charges having to be made for spares and maintenance, Government Department would have been able to save large amounts of money.

50. 6-148 Deptt. of Electronics

As noted earlier, one of the chief items of business which provides substantial revenue and profit to the multi-nationals comprises the provision at a price of data processing facilities. It seems now entirely within the technological competence of the Department of Electronics to set up the common computer and data processing facilities to meet the country's requirement. The Committee have elsewhere in the report stressed the need for a time-bound programme to set up these centres in metropolitan and other key regional cities. Such facilities should be such as not only to meet the users' present requirements but also anticipate the steadily growing sophistication in information systems. The Committee wish that the Department of Electronics set up these facilities without delay and in a satisfactory manner, thus obviating any further reason for the foreign companies to function in this area.

51. 6·149 Deptt. of Electronics  
Deptt. of Economic Affairs

The Committee note from a recent study that the total outflow of foreign exchange as a result of IBM operations in India works out to about Rs. 10.83 crores during the period 1969 to 1974. At a lesser level, the total outflow of foreign exchange on account of ICL's operations in India comes to about Rs. 9.58 lakhs during the period 1972-73 to 1974-75.

52. 6·150 —do —

The Committee cannot appreciate the rationale behind the decision to allow IBM and ICL an import entitlement to the tune of 85 per cent of the value of their export earnings. This concession has enabled these companies to bring in at negligible cost machines which had been outmoded in advanced countries on 'As Is' basis and then to rent them out at exorbitant rates to the users here, including Government Departments. This facility has also enabled the multi-nationals to import punch-card systems and unit-record machines and such other items, which are obsolete elsewhere but could, still be palmed off to gullible Indian users at a high margin of profit. Apart from the sharp practice involved, such transactions bring in outmoded, largely superfluous and yet expensive technology which, in effect, retard our own advance.

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53. 61·151 Deptt. of Electronics

The Committee see no reason why Government fell for such a peculiar package arrangement as has just been referred to. In all prudence the details and value of machinery and parts required for turning out export products should have been scrutinised at some depth. It was all the more necessary to ensure that the machinery

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and parts imported for the internal market truly conformed to the Government's thinking and policy on computers and that the equipment so imported was best suited to the technological requirements of the country. In any case, Government should have taken pains to see that there was a co-relation between the cost at which the goods were imported and at which they were made available to the end users including Government Departments, in order to prevent all scope for defrauding the public and the exchequer by dexterious manipulations. The Committee would like to recall in this context the views put forward by the Secretary, Electronics Commission, during the course of evidence before the Committee:

"We are clearly of the view if there is to be any meaningful role of the operations of IBM in regard to 100 per cent export programme, it has to be as in the case of other export promotions where no such preferential account is built up. Foreign exchange earnings come in the country and become part of the reserves and import operations are undertaken based on the kind of product to be imported, their prices and implications for the local programmes".

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54.

6.152 Deptt. of ElectronicsDeptt. of Economic Affairs

The Committee would like Government to ensure that in any transaction with multi-nationals and foreign companies in computers etc. care should be taken to prevent a net outflow of foreign exchange; that the import requirements for export manufacture are

treated distinctly from those for the internal requirement of the country; and that a strict watch is kept on the quality, quantity and price of goods and their relationship to the requirements of the internal market and the price charged from the end user.

55. 6·153 —do—

The Committee note that the ICL follow different conversion factors in the matter of transfer of machines and equipment from the parent foreign company to the Indian branch; the rate ranging, for some extraordinary reason, from £1=Rs. 8.3 to £1=Rs. 19.25. This must be a clever mechanism which must be fully probed by Government and action taken accordingly, so that all detriment to the country's interests can be avoided.

56. 6·154 Deptt. of Electronics

The only tenable excuse for the import of 'As Is' machines could be their suitability, at competitive cost, to the users at a particular stage of development. The facts as pointed out in Chapter III and earlier in the Committee's 127th Report on the use of computers for the Railways, indicate clearly that the hire charges were exorbitant and bore hardly and relationship to the nominal cost at which these 'As Is' machines were imported as "hulks" and refurbished after arrival. The only valid criterion for permitting such imports would be whether these had been made available at economic or reduced rates to the end-users. The answer to this query can be only in the negative. The Committee regret to find that Government never exerted itself through its various specialised and also knowledgeable agencies like the Departments of Electronics, Railways, Economic



Affairs and Industries to examine the issue in an integrated manner and even to ensure that an organisation like IBM did not use the nascent market of India as a dumping ground for its outmoded machines by dint of high-pressure salesmanship. The Committee would like Government to at least learn a lesson from this harsh experience. Such package deals as have made it possible for IBM to dump in India what was largely junk, that is, machinery and gadgets which had hardly any market elsewhere in the world and yet to earn excessively high profits without making any substantial or significant contribution towards India's attainment of self-reliance in critical areas of computers, must no longer be tolerated in this country.

57. 6-155 Deptt. of Electronics  
Deptt. of Economic Affairs

The Committee learn that the Electronics Commission had made a review of the activities of the IBM and ICL as far back as 1971 and had come to the conclusion that "as foreign controlled companies, the activities of IBM and ICL should be so re-oriented that they are concentrated either in heavily export-oriented production programme of both hardware and software and/or in domestic manufacturing activities involving production on the basis of advanced technology on fully contemporary computer equipment which fulfils genuine national needs." The Committee note that the matter has been sought to be followed up since by the Department of Electronics, the Department of Economic Affairs and the Reserve Bank. In a com-

munication sent by the Reserve Bank to the IBM in November, 1975, it was stressed that:

- (i) The Indian branch of IBM shall be converted into an Indian company, with a non-resident interest in the equity capital not exceeding 40 per cent, within a period of 2 (two) years from the date of receipt of permission under Section 29(2)(a) read with Section 29(2)(c) of the Act.
- (ii) The manufacturing activities of the company shall be for such capacity as is approved/recognised by the appropriate authority as on 31st December, 1973, subject to such additions or modifications as permitted upto that date by the press notes and notifications issued by the Government of India under the provisions of the Industries (Development & Regulation) Act, 1951.
- (iii) The branch shall not expand its business activities beyond the level existing on 31st December 1973 or undertake any new trading, commercial, industrial activity without the prior approval of the Reserve Bank. Such prior approval will not be required in respect of export of goods manufactured by the branch.
- (iv) IBM will submit to Government of India/Reserve Bank of India, within a period of 3 months from the date of receipt of the Bank's approval under Section 29(2) (a) of the Act, proposals relating to the taking over of the

assets and liabilities of the Indian branch of IBM by the new Indian company to be floated for the taking over of the business of the branch, along with an application for issue of shares by the new company.

58. 6·156 Deptt. of Electronics  
Deptt. of Economic Affairs

The Committee understand that the position has not yet crystallised as the matter is still under discussion between IBM and the various Government departments concerned. The Committee, are however, positive that the provisions of the Foreign Exchange Regulation Act and the guidelines and directives issued thereunder should be strictly enforced and the spirit underlying this basic national legislation must not be foiled. With the growth of our computer industry and the measures now happily being taken to develop mini and midi computers, and the setting up of the Computer Maintenance Corporation, it should be possible for us to be self-reliant except for too highly sophisticated areas requiring large-sized computers. There can, thus, be no reason to truckle down to the truculent postures of such formidable foreign firms like IBM. These observations apply *mutatis mutandis* to ICL and its associate ICIM.

59. 6·157 Deptt. of Electronics

The Committee feel happy and fortified in their view, as they note the statement made before them by the spokesman of the Electronics Department that "in case IBM decide that they would not really fall in line with the policies of the Government of India and if they

decide to leave the country, we should not be in any difficulty at all". He had added that "the Technological options that we see for this country—the manner in which computer industry should develop in this country are decidedly not in line with the technology policies of IBM".

60. 6·158 — do —

It is seen that the exports made by IBM consist mostly of unit record machines and punch card systems, both of which are fast becoming obsolescent in the context of rapidly developing technology. India has an abundance of skilled manpower, and if IBM really meant to assist in the technological or industrial growth of this country, they could have had a more meaningful programme for manufacture. They have made no effort, either to sub-contract their export requirements to indigenous units, help them with technology and know-how and to secure a meaningful participation in export effort. Assistance from such quarters as IBM cannot, however, be expected for such tasks as the development of a research and development programme which would truly facilitate the attainment of self-reliance and the upgrading of our technology to an internationally competitive status.

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61. 6·159 Deptt. of Electronics  
Deptt. of Economic Affairs

The Committee would insist that whatever proposals are put forward by IBM or ICL in compliance with the directives issued by Government or the Reserve Bank of India in pursuance of the Foreign Exchange Regulation Act, these would be scrutinised minutely by our own experts well-versed in electronics, costing etc. so as to make sure that IBM, ICL and other foreign companies are

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62.	6·160	Deptt. of Electronics	<p>not permitted to circumvent the country's laws and that their role, if any, is permissible, should be strictly limited to export plus high technology programmes subserving the national interest.</p> <p>The Committee attach great importance to this matter and would like to be informed as soon as some tangible decisions have been taken about IBM, ICL and other foreign companies in the field of computer industry. They would like to be satisfied that the decisions conform to the criteria hereinbefore indicated.</p>
63.	6·161	<u>Deptt. of Electronics</u> <u>Deptt. of Revenue &amp; Banking</u>	<p>In their 127th Report (5th Lok Sabha) on the Railways, the Committee had pointed out that there was serious difference in the prices shown by IBM for customs in import documents and those claimed by them from Railway administration. The Committee called for information about the purchase price paid by Government Departments on items imported by IBM and ICL and the actual value of these articles declared to customs at the time of importation by the suppliers. They regret to observe that the Central Board of Excise and Customs have not been able to furnish the information to the Committee. Certain excuses for this failure have been conveyed to the Committee, but they are by no means satisfactory. In view of the apparently huge margin between the cost as shown in declarations to the Customs authorities and the cost as charged from users including Government Departments it is strange that Government could not collect the relevant information required by the Committee. On their own admission, the Central</p>

Board of Excise and Customs had been aware of the fact that "the IBM having relationship with their foreign associates were in a better position to import such 'AS IS' machines by under-invoicing them and charge high margin of profit by selling those machines in India". In spite of it, unfortunately, the customs authorities had not stirred themselves to action in earlier years. If the differentials between the prices charged to the users and the prices shown in the customs document by IBM, as in the case of Railways is any indication, IBM must have defrauded our customs revenue on a huge scale.

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6.162

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A summary recapitulation will give some idea of this defrauding process. From 1 May 1962 to 25 August 1973 imports made by IBM had to be assessed to customs duty on the basis of Inter-Company Billing Prices plus 73 per cent and actuals of the freight, insurance and other charges. From 25 August, 1973 it was found necessary to increase the loading to 350 per cent in respect of capital goods machinery and equipment etc. imported by IBM and for data processing equipment loading was decided on case to case basis. The position being disconcerting, the Committee wanted to know the exact position and the rationale of this imposition which was no doubt necessary to foil IBM's sharp practice. The Committee regret that things appear to be done in Customs on an *ad hoc* basis and there is no consistent principle behind assessment of customs duty on the import of "AS IS" machines. Between 1956 to 1962 the customs duty was related to the rentals charged by the Company. Later on, certain other additions were made on account of

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the value of remittances made by the Company of their foreign profits and it was fixed at 73 per cent. After a subsequent review the Department came to the conclusion that higher custom duty should be charged but a final decision was taken only in December 1974 that is perhaps after the Committee's Report on the Railways was presented to Parliament. Our Customs administration should be run on a more principled foundation and all efforts in that direction must be made forthwith.

65. 6.163 Deptt. of Electronics  
 Deptt. of Revenue &  
 Banking

The Committee disapprove of the casual manner in which this question of customs duty was dealt with by the Customs authorities, particularly, in the earlier years. It is more surprising that although Customs Rules permitted fixation of prices for assessment of customs duty on the basis of the domestic selling price in the country of origin, Government did not resort to this rule till presumably the Audit Committee pointed out the apparent anomaly in the prices declared to the customs authorities and charged to the Railways etc.

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66. 6.164 —do—

The Committee find that while since August 1973 the value of capital goods imported by the IBM is being determined after loading the inter-company billing price by 350 per cent, in the case of data processing machines etc. the loading would be varied from machine to machine, depending upon what the price of that machine is in the country of export less 25 per cent. adding to it, insurance

and freight. IBM has questioned the very basis of the order of loading of Intercompany prices by 350 per cent and gone up in appeal to the Appellate Collector. The Committee are informed that a settlement was reached with the company that pending judgement by the Appellate authority the customs duty would continue to be collected on the existing basis and that the company would pay the difference retrospectively if the decision went against it. The Committee have also been informed that a guarantee and bond have been taken from the company to this effect. Keeping in view the huge amounts involved and the importance of resolving uncertainty in the matter, the decision by the appellate authority should be expedited. Meanwhile, the Committee suggest that the form and amount involved in the bond and the guarantee given by the IBM should be examined by experts in the line in order to make sure of its adequacy and enforceability.

67. 6.165 —do— The Committee are surprised that the question of similarly loading the invoices of the other multi-nationals like ICL and ICIM for the import of machinery and data processing equipment has not been finalised so far. The Committee stress that this should be done without delay.
68. 6.166 —do— The Committee regret to note that it has not been possible for the Central Board of Excise and Customs to furnish to them details of the total customs duty realised on all imports by IBM and the total drawback paid to them during each of the last 6 years on the ground that the statistics in the Customs House are not maintained
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withheld. This goes to prove that the earlier claim of the Custom Department that only due amount was being paid to the IBM as drawback was not correct. In the absence of physical verification of the duty paid components going into manufacture, it was learnt that the Customs authorities were depending on the certificate of the exporter which was admissible under Rule 11 of the Customs Rules. The Committee feel that the amount of Rs. 33.32 lakhs due from IBM on the ground of excess payment of drawback is not a small amount and Government should review thoroughly the entire basis and the modalities followed in determining and paying drawback so as to recover the over-payments made to both IBM and ICL on this account.

70. 6.168 —do—

An interesting facet of this problem which came to the notice of the Committee was that IBM was allowed to import certain items on payment of import duty and certain others under bond. Only recently IBM had been given option either to use wholly duty-paid components or bonded components in their manufacturing process. Since the items imported on payment of duty as well as those imported on bond are likely to be used in the same machine, the Committee feel that the Customs authorities should segregate them and ensure that the duty is correctly levied and paid and drawback is also correctly given.

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71. 6.169 —do—

IBM hires its machines to customers on the basis of one time installation charges. It has been clarified by the Board of Excise and Customs that for purposes of levy of excise duty they evaluated

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the various types of computers and Data processing machines on the basis of list price of such machines plus "one-time installation charges". The Excise authorities also loaded the prices declared by IBM by 73 per cent on the analogy of customs. But this has been appealed against by IBM. The Committee feel that the determination of the value of the products of the company should be carefully re-examined by Government so that the correct value for levy of excise duty is determined and the excise duty legitimately due is realised.

72.

6.170

Deptt. of Electronics

Deptt. of Revenue &  
Banking

In view of the fact that in respect of "AS IS" programme the contribution of IBM is only to refurbish the obsolete machines imported by them from abroad, it is a moot point whether this should be treated as a 'manufacturing' activity for purposes of claiming tax-credit certificate and other benefits under the Income-tax Act. The Department of Electronics were prepared to treat "AS IS" as an assembly programme. The Department of Electronics, as pointed out earlier in this Report, had cast doubt about calling them as "genuine manufacturing activity". Another wing of the Government, viz., the Income-tax Department, had also questioned this definition and had informed the Committee that 'the entire issue whether the company's activities in India can be treated strictly as "manufacturing" will be examined in detail during the course of the re-assessment proceedings for the year 1967-68 onwards'. In

view of the varying opinions expressed on the subject and the revenue implications involved the Committee feel that Government should immediately determine the correct description of the activities of these multi-nationals which will also enable a proper perception of their role from the social angle.

73.

6.171

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The picture that emerges about the performance of IBM on the Income-tax front is also very discouraging. The Committee had asked whether any default under the Income-tax Act, viz. in the filing of returns, payment of advance tax, deduction of tax at source and perquisites given to officers and employees etc. had come to notice in respect of the company. The Ministry replied that no default on the part of the company in respect of filing of returns, payment of advance tax etc. "has come to the notice of the Department so far." This almost sounds an evasive answer, and the Committee would require specifically the details for all the years for which IBM filed the returns, the dates on which such returns were received the date of payment of advance tax, the total tax deducted at source and paid to Government's account. That the Department has been lax in this case is evident from the fact that the payments made by the Government Departments and other agencies were not subjected to deduction of tax at source under section 195 of the Income-tax Act till 1970. Even after March 1970, the company had managed to get a certificate under Section 195(3) from the Income Tax Officer and it has not been vouchsafed to the Committee, whether they had fulfilled all the conditions mentioned in Rule 29 (b) of the Income-tax Rules.

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74.	6.172	<u>Deptt. of Electronics</u> Deptt. of Revenue & Banking	<p>As regards the recognition of the assessee as a company, there are many areas of darkness on which in spite of the best efforts of the Committee light has not been thrown by the Board. It was stated that the IBM World Trade Corporation was recognised as a company under sub-section (6) of Section 2 of Income-tax Act, 1922. The file in which this recognition was issued in 1953 was stated to be missing. Then when the question of assessment came, the IBM World Trade Corporation submitted only its branch account's results for Income-tax purposes and the department's representatives admitted that IBM World Trade Corporation's books were not called for scrutiny. To a question whether they were in possession of the Company's World Balance Sheet, the reply was in the affirmative. If so, it is intriguing how the proper allocation of expenses were not made and it was left to the assessee to come forward with a "Voluntary" disclosure of head office expenses which were claimed and allowed, in spite of their being excessive and suspect. It is obvious that the Income-tax department has been adopting an attitude almost of throwing up its hands while dealing with IBM World corporation, possibly under the impression that they could not call for information regarding the total global activity of such foreign companies. To a question whether Rule 10 of the Income-tax rules applied in this case, the witness replied that since the Branch balance sheet was available it was not necessary to resort to Rule 10. This is, to put it mildly, following the line of least resistance. The Com-</p>

mittee are not satisfied with the Ministry's reply. The Income-tax Department was not even apparently aware of the fact that IBM World Trade Corporation which had obtained recognition as a company had split into two subsidiary Corporation, viz. IBM World Trade America|Far East Corporation and IBM World Trade Europe Middle East Africa Corporation. To a question about this division the Department's reply is as follows:

“As the parent company i.e. IBM World Trade continues as such, without any change in name or form, the question of fresh recognition of the Branch of the company does not arise.”

75. 6.173 —do—

It is not clear from this reply whether the Indian activity alone remained with IBM World Trade Corporation and not transferred to the Far Eastern subsidiary. However, the Committee find from the Company's Annual Report of 1974 that the Indian Branch is managed by the Far Eastern subsidiary. It is therefore surprising that the Ministry should say that the original certificate issued far back in 1953 to the IBM World Trade Corporation would continue to apply to the branch.

76. 6.174 —do—

It is on record that substantial additions had to be made by the Income-tax authorities in the returns submitted by IBM during the years 1967-68 to 1973-74. The major addition was on account of excessive development rebates claimed by the company which were not allowed by the Income Tax Officer. The Committee however

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note that relief was subsequently granted by the Appellate Assistant Commissioner. The Tribunal also did not uphold the Government's stand. However, the Department has filed an application before the Bombay High Court. The Committee urge Government to pursue the matter before the court conclusively. Besides the development rebate, there were certain other additions made by the Income-tax Officer which were acquiesced in by the assessee. The Committee would like Government to examine whether these additions attract the provisions relating to concealment and if so the necessary penalties should be imposed and recovered.

77.

6.175

Deptt. of Electronics

Deptt. of Revenue &  
Banking

The Committee also find a serious lacuna in the Income-tax law viz., section 33(1)(a). According to the Board of Direct Taxes development rebate was permissible on second hand machinery under certain circumstances namely that such machinery or plant was not used in India at any time previous to the date of such installation. No wonder IBM had claimed development rebate on the "AS IS" machineries imported by them. It has been admitted by the Department of Electronics that all that was done to these "AS IS" machines was "to assemble them". Therefore, to regard this activity as manufacture and to allow Development Rebate on machines given even on rentals is something which appears to be not in consonance with the objectives underlying this rebate,

78. 6.176

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The Committee are unable to appreciate the technical stand taken by the Income-tax Department in the matter of allowing the depreciation for calculation of taxable income. It is common knowledge that a large number of machines having no book value are in circulation and are earning exorbitant rentals for IBM and ICL. The Income-tax authorities, however, stood by the letter of the law and merely followed the criteria of "original cost of any plant or cost at the time of installation and calculated the depreciation according to the prescribed rates" without following any independent check with reference to the entries in the books of the company. It is common knowledge that IBM recovers depreciation on its machines hired out on a 4 years life basis but actually the machines last much longer. But the Income-tax authorities again seem to take a very legalistic stand adopting a certain prescribed formula "irrespective of the amount of the depreciation charged in the books of the company". Since the life of the machines is admittedly much longer than the four year period taken by IBM it is evident that the company may have been making excess claim on the ground of depreciation in order to reduce their taxable profits. The Committee would urge Government to go into the matter in all its aspects and re-examine the cases where excess depreciation might have been allowed. Suitable instructions should also be issued to provide clear guidelines to the field officers.

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6.177

Deptt. of Electronics  
Deptt. of Economic Affairs

According to information furnished to the Committee, IBM had so far remitted over Rs. 3 crores by way of profits during the period



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1961 to 1971. The representative of the Department of Economic Affairs had during the course of his evidence before the Committee admitted that Government were all along aware of the fact that there was need to do something regarding repatriation of profits, but Government did not want to impose restrictions on remittances of profits and had instead, adopted the course of requiring foreign companies to reduce their equity holdings to 40 per cent. The Committee note that Government have been keeping under review the question of large remittances of profits by foreign companies and multi-nationals. The Committee stress that every effort should be made to see that this largely avoidable strain on our foreign exchange position is minimised by a truly meaningful stream-lining of the entire issue.

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6.178

Deptt. of Electronics

Deptt. of Revenue &  
Banking

The Committee note that IBM had been given provisional tax credit certificates for Rs. 34.74 lakhs under Section 280(3)(b) for manufacturing items included in the first schedule of the Industrial Development and Regulation Act. But it is astonishing that in giving such certificates the income arising from rentals was also taken into consideration. The Committee are glad that the assessments for the years 1967-68 to 1970-71 for which tax credit certificate have been previously given are now going to be re-opened and the correct amount of certificate admissible would be finally determined during the course of the re-assessment proceedings. The Commit-

tee, however, feel that this was a serious lapse and the circumstances in which such certificate was given in respect of income arising from rentals should be investigated and responsibility fixed.

81. 6.179 —do—

Like the repatriation of profits and the head office expenses the Committee find that Rs. 4.98 lakhs were allowed to be repatriated on account also of development rebate reserve. The reason given by the Income-tax Department is that they do not "allow the assessee to use the provision for development rebate for a period of 8 years. They have to get it either for capital expenditure or some other approved expenditure. After that they are allowed to take it as a part of profit and they can declare dividend out of it." The Committee are inclined, however, to agree with Audit that the philosophy behind development rebate was to give incentive to develop industries in India. That could be done by utilising the reserve for the intended approved objective. But the reserve had to be kept in tact and not frittered away by way of dividends or repatriation abroad after 8 years. The Committee urge that the matter should be re-examined so as to preserve funds created out of the development rebate for development within the country.

82. 6.180 —do—

The Committee are surprised that in spite of the fact that IBM is a giant world company, the return of income for several successive years from 1964-65 to 1973-74 were assessed by an officer only of the rank of Income tax Officer. The Committee in their 186th Report on Corporation Tax and Income Tax—A Review have reiterated that initial assessment of large companies should be made cen-

trally by experienced senior officers of the department not lower in rank than an Assistant Commissioner so that all aspects having bearing on taxes are gone into. The Committee would like the Ministry to investigate how the assessments of IBM for all these years were being done by only an Income tax officer and not by a senior officer as per the principle stressed several times by the Committee and accepted by Government. Government should inform the Committee of the action taken and fix responsibility in the matter. Government should also review this matter in respect of other powerful companies, particularly the multi-nationals, to make sure that their income is meticulously assessed initially by senior officers not lower in rank than an Assistant Commissioner.

83.

6.181

Deptt. of Electronics

Deptt. of Revenue &  
Banking

There is more than enough evidence that the multi-nationals in the field of computers and data processing equipment, such as IBM with its near-monopoly position in India, have defrauded the country of enormous revenues by resorting to various unfair practices like transfer pricing under the garb of inter-company billing system, misuse of import entitlements, exaggerated claims of drawbacks, under-payment of excise duty, exaggerated claims of depreciation, development rebate, head office expense etc. All these practices have enabled them to reap high profits at the cost of the exchequer as well as the technological development of the country,

84. 6.182 Deptt. of Electronics

The Inter-ministerial Working Group which was appointed on the suggestion made by the Comptroller and Auditor General of India that Government should go into the cost and the rates of return on which IBM had determined the high rates of prices for their machines, had come to the conclusion that there is *prima facie* case for reduction in rates charged by IBM and ICL to the extent of 25 per cent to 30 per cent. The Inter-ministerial Working Group had also recommended that the Department of Electronics might discuss with IBM and ICL regarding further steps to reduce the prices with effect from January 1969. The Committee are not aware of the results, if any, of these negotiations. Information in this matter should without delay be made available.

85. 6.183 Deptt. of Electronics  
Deptt. of Economic  
Affairs

The Committee are confident that if the powers available to the Government under the Foreign Exchange Regulation Act are used with prudence and determination, it should be possible to ensure that the foreign companies, including multinationals which are allowed to function in the country, conform strictly to the laws of the land and serve the objectives of development and are in any case sternly prevented from indulging in impermissible activities. The Committee expect that Government will soon be in a position truly to claim that such foreign operators have been curbed and shown their place in a self-respecting country like ours.

86. 7.63 Deptt. of Electronics

The Committee learn that the Working Group on Computers, Controls and Industrial Electronics of the Task Force on Electronics and communications of the Planning Commission has estimated

that there would be demand for 800 small and mini-computers in the country during the years 1975-76 to 1978-79. The demand for medium size computers according to the same estimate would be 208, while that for large computer installations 12. However, taking into account the somewhat limited current awareness of how well the computer can be used for development and the constraints on expanding this awareness, the Electronics Corporation of India have estimated that the demand for computers in the small and medium class during the period 1974-79 will be about 650 installations only. The Committee feel that projections for the future demand of computers should be based on more realistic considerations as any effort to evolve an effective strategy directed towards self-sufficiency in the field of computers would be meaningless in the absence of a reliable qualitative and quantitative estimate of the demand that exists now and is likely to arise in the country in the future.

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An analysis of the status of the computer industry in India and indigenisation capabilities reveal that the present indigenous effort in the production of computers is very limited. Currently the only indigenous computer manufacturing programme in the country is that of the Electronics Corporation of India, who are at present manufacturing only computers in the mini and small range (TDC-12, TDC-312, and TDC-316). Although developmental work on a

medium scale computer (TDC-332) is stated to be in progress, actual production is anticipated only in 3 to 4 years time. The manufacturing programme in ECIL began in 1969, but till now, only some 60 systems have been produced and installed.

88      7.65      —do—

It is further seen that even the present indigenous computer manufacturing programme is largely based on imported peripherals (input-output equipment) and components (such as semi-conductor devices, ferrite core memories etc.). Except for the systems engineering and design capability where indigenisation is stated to have been largely achieved, ECIL is dependent significantly on imports for vital components and materials. So far as the peripherals are concerned the country has still to make considerable leeway in indigenisation.

89      7.66      —do—

Bharat Electronics Ltd., another public undertaking engaged in the manufacturing activities relating to computers is stated to have built up considerable competence and expertise in the computer and computer peripheral area, both with regard to indigenous design and development activities as well as production activity. Its present manufacturing activities, however, are restricted to the manufacture of a limited number of ICL 1901A computers (only Electronics portion) under the terms of an agreement with the International Computers Indian Manufacture Ltd., which is an ICL associated company. The Government of India has so far licenced ICL for production of only 32 Nos. of 1901 systems, out of which BEL has already manufactured and supplied 27 and would be making the balance, that is, five, during the course of another year.

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90	7.67	Deptt. of Electronics	Keeping in view the large demand for computers and data processing equipment as projected in the estimates for the Fifth and Sixth Plan intensive efforts require to be made to step up the production of indigenous computer systems.
91	7.68	-do-	<p>The Committee note that the strategy developed for attaining self-reliance in the field of computers has the following four main elements:</p> <ul style="list-style-type: none"> <li>(a) Ensuring that the direction and pace of advance of production capacity for computers and allied equipment, as also the availability of appropriate computational facilities both for direct use and for supporting the development of software tools are determined by national needs, priorities, and requirements;</li> <li>(b) The Key-segments of the computer industry are under national control and free from any monopolistic trends;</li> <li>(c) That a viable indigenous programme of production of computer hardware and software is built up to meet national requirements and to generate surpluses for export; and</li> <li>(d) That over a period of time, a substantial part of the technology needed for the design and production of</li> </ul>

systems, sub-systems, components and materials and also the supporting software is generated through indigenous research and development; what is more, that such technology will be appropriate to our needs and over a period of time become contemporary in terms of international availability.

92            7.69            -do-

The Committee also note that the Technology Development Council of the Electronics Commission has funded a number of research projects in R&D laboratories like Tata Institute of Fundamental Research and two production units like ECIL and BEL to develop CPUs, Software and peripherals for manufacture of small and medium-sized computers. The Bharat Electronics and Hindustan Teleprinters are understood to have developed, on their own, prototype of certain peripherals such a paper tape readers, paper tape punches and matrix type printers. The Department of Electronics has also given design and development grants to BEL through the Technology Development Council, for the design and development of more sophisticated peripherals like Card Readers, Line Printers and Magnetic Tape Transports.

93            7.70            -do-

Certain indigenous manufacturing firms in the private sector who have the capability of undertaking design and development activity in the field of computers have also been identified and the question of utilising them for this purpose is under consideration.

94            7.71            -do-

The Department has finalised the proposals to set up the Semiconductor Corporation for making large scale integral circuits indigenously in the public sector.



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95	7-72	Deptt. of Electronics	The Committee note that there has been phenomenal increase in the Semiconductor Industry and that already large scale integrated circuits are available which incorporate as many as 20,000 transistors, diods and other elements on a single chip. Technology is stated to have been developed elsewhere in the world which can bring products into the markets having close to 100,000 transistors, diods and such other elements on a single chip within the next three years. Several companies abroad are in advanced stage of research for putting a million gates on a chip.
96	7-73	-do-	The Committee note that according to the Department of Electronics, requirements of large sized computers, and some sophisticated peripherals and components would continue to be met by imports even after the Fifth Plan period.
97	7-74	-do-	The Committee would like to point out that technology in computer industry has been growing at a fast rate and that even in terms of sub-systems, technology is available from a very large number of sources. For example for CPU, it is understood that there are at least 40 independent manufacturers from whom technology could be bought and for peripheral units the number is twice as large.
98	7-75	-do-	The Committee also note that according to the Department "in the computer industry, there is no such thing as exclusive know-how for which alternatives do not exist."

99 7.76 -do-

The Committee feel that broadly speaking the approach of the Department of Electronics is on the right lines. What is required is time-bound and achievement-oriented action. Apart from the need for setting up the Corporations in the public sector for manufacture of Semiconductors and Maintenance of Computers, it is imperative that a close and integral link with the Electronics Corporation of India—the pioneer in the field—is constantly maintained.

100 7.77 -do-

The Committee understand that after an extensive analysis about the kind of computer technology which was relevant to the Indian conditions, the Information, Planning and Analysis Group of the Electronics Commission has come to the conclusion that about 75 per cent of computer capacity requirements of the country could be met through mini-computers and mini-computer networks and the remaining 25 per cent through maxi-computers. The Department of Electronics has accordingly been directing its efforts towards establishment of a mini-computer industry in the country and an active promotion of applications for introduction of mini-computers in various sectors relevant to national development. The total national demand of around 400 mini-computers by 1978-79 is expected to be met through indigenous production. How this target of production will be reached is however not clear, as presently only some applications from the prospective entrepreneurs for grant of industrial licences have been received and are being processed. Since mini-computers are to be used for a large proportion of our computational requirements in future and they can very well replace the old and obsolete IBM 1401 machines etc. the Committee desire that the Department of Electronics should

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work out time-bound schedules for creating the necessary infrastructure for the production of these computers.

101      7.78      Deptt.of Electronics

Another important area where attention has to be paid is the development of computer software. A great deal of software has to be generated for a variety of computer applications, particularly using indigenously manufactured systems. The software generation also involves highly skilled manpower, which is abundantly available in the country. Moreover because of the availability of skilled labour, this activity is eminently suited for export promotion. The Committee are glad that the Department of Electronics is fully conscious about the potentialities of software export from this country and they have already initiated action in various directions for software development. According to the Secretary, Department of Electronics, the problem was not so much of development of software as of finding the right marketing outlets. The Committee would like the Department of Electronics to sustain its efforts till success is achieved.

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102      7.79      -do-

For attaining the goal of self-reliance in the field of computers, the Committee feel that there is need for intensifying Research and Development. In this behalf a three-fold approach is called for:

- (i) There should be clear demarcation of duties and responsibilities, a major share being given preferably to R&D Sections of the production unit concerned.

- (ii) There should be closer coordination between the scientists and technologists so as to achieve viable production in the quickest possible time.
- (iii) Those concerned with R&D may hold periodically a workshop meeting where technicians/scientists concerned should present facts and prototypes etc., to bring out the precise progress achieved. To this meeting could be invited directors of manufacturing units in public sector, Research Institutions etc., so as to facilitate an objective and meaningful review of the progress made and to throw up concrete ideas to speed up progress.

103

7.80

-do-

The Committee recommend that Government should draw up a plan outlining the general strategy for self-reliance in computers, and in particular, the manner in which it is proposed to meet the anticipated large requirements of mini-computers. In this context, the Committee note that as at present the manufacture of mini-computers would mostly be an assembly operation, since such items as memory cores, integral circuits, peripherals etc., are to be imported. In the circumstances, it is of the utmost importance that there should be a well thought out programme so that only the minimum number of units for whom work on long-term basis would be available are set up. The Committee would like Government to consider whether it would not be better in the circumstances, that the manufacture of mini-computers is developed either as a subsidiary or ancillary activity of the well established public sector units already in the field. The Committee need hardly point out

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			that it is only after the essential components like memory cores, peripherals, software, etc., are developed and manufactured in adequate quantities and made available at competitive prices so that small units in the cooperatives or private sector can be expected to undertake manufacturing activity in a meaningful manner.
104	7.81	Deptt. of Electronics	The Committee would like Government to go into all aspects of any foreign collaboration proposals which may be received including the reported tie-up between Burroughs and the Tata Consultancy Service. Government should ensure that no foreign company secures a position in the field of computers either on its own or in collaboration where it could dictate its own terms or even remotely pose a potential security risk.
105	7.82	-do-	The Committee have been informed that the Computer Maintenance Corporation is being set up under the Department of Electronics with headquarters at Hyderabad and branches at Bombay and Delhi. The objectives of the Corporation include <i>inter alia</i> system engineering, installation and maintenance of data communication and terminal equipment, planning, coordinating and implementing the national effort on computer and associated equipment maintenance, providing a central repository of computer spares, materials, etc.
106	7.83	-do-	The Committee feel that there has to be a built-in link between the Computer Maintenance Corporation and the Electronics Corpora-

tion of India which is the principal public sector undertaking and has already manufactured and put into service about 60 computers.

107      7.84      -do-

The Committee note in this context that while the Electronics Corporation of India Ltd. is working under the administrative control of the Department of Atomic Energy, the Computers Maintenance Corporation would be working under the Department of Electronics. In this context, the Committee would like to draw attention to the recommendations made earlier by the Estimates Committee in their 66th Report (Fifth Lok Sabha) and reiterated by them in their 85th Report (October, 1975) that Government should consider the question of transferring the administrative control over the Electronics Corporation of India Ltd. from the Department of Atomic Energy to the Department of Electronics. The matter is understood to be still under the consideration of Government. The Committee feel that if both these Corporations (Computer Maintenance and Electronics Corporation) are brought under the administrative control of the Department of Electronics, it should be possible to foster an integral linkage from the very inception. This would be in the interest of avoiding overlap and ensuring proper distribution of duties and responsibilities.

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108      7.85      -do-

The Committee understand that while no difficulties were anticipated in taking over the maintenance of Computers from ICL, the talks had not yet reached the conclusive stage in respect of IBM. The Committee would like these matters to be finalised at the earliest; the arrangement should be such as to ensure a smooth transi-

tion so that the users can be assured of uninterrupted and efficient maintenance and servicing of the existing computers.

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7.86

Deptt.of Electronics

The Committee urge that the Department of Electronics should work out the requirements of technical personnel to match the manufacturing programme envisaged for the computer industry during the 5th and 6th Plan periods. This perspective plan should cover both the immediate and future requirements year-wise so as to provide a fair guide for development of training facilities in the requisite fields. Persons required for innovative leadership in this important technology may be got trained in consultation with the Department of Science and Technology in the Indian Institute of Technology Research Institutions and Universities. There should also be programmes for training of shop floor personnel in conjunction with the Electronics Corporation of India, Bharat Electronics, Computers Maintenance Corporation etc. It should go without saying that the training programme should be suitably designed and improved continuously in the light of experience.

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7.87

-do-

Now that the country is going forward with a sizeable programme for computer manufacture, every effort should be made to publicise the new opportunities of work, so that some at least of the talented Indians working abroad could be attracted back to patriotically-motivated employment at home. Government should also consider ways and means of attracting those who are highly skilled in the

field to come at least for a specified duration and to assist in the research and development effort in the critical areas of peripherals, software etc.

III. 7.88

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The Committee recommend that, as indicated earlier, Government should work out a comprehensive policy for self-reliance in the computer field, mentioning in particular how the requirements for computers in the Fifth Plan, specially of mini-computers, are proposed to be met. This, it is suggested, may be laid before Parliament in a white paper within a period of six months of the presentation of this Report. There might then be a pointed and purposeful national debate on the subject.

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