

million tonnes. This would result in fall in per capita availability of pulses in the country.

Sir, it is contended that the 'Green Revolution' which brought about increase in the productivity of wheat and other cereals, has affected the productivity of rich protein content pulses. It can be seen that the production of pulses suffered most in the major wheat producing States like Punjab, Haryana and Uttar Pradesh. Similarly production of cotton and sugarcane has been affected greatly due to drought and poor monsoon conditions.

It is, therefore, requested that the Government should take immediate steps to encourage the cultivation of pulses, encourage use of short-term varieties of pulses for cultivation as also for distribution of improved seeds, so that production of pulses is stepped up and import of this item is minimised, thus saving valuable foreign exchange.

- (vii) **Demand for looking into the inconvenience being experienced by passenger in trains running between North Bengal and Calcutta.**

SHRI ANANDA PATHAK (Darjeeling): Sir, the most vital train, Darjeeling Mail, linking North Bengal with the capital of West Bengal, Calcutta is always running late causing much inconvenience to the passengers. This train never reaches its destination either Sealdah or New Jalpaiguri at the scheduled time. Its coaches are in very bad condition. Even the first class compartments are without proper lights and fans, doors and windows are damaged, lavatories and bath rooms are always dirty. Condition of second class coaches is horrible. Even the 3 tier reserved coaches are packed with unreserved ticket holders or ticketless persons. Outsiders always create nuisance in the train. Similar is the case with other trains like Tinsukia Mail, North East Express, Janata, Kamrup and other trains originat-

ing from Guwahati and passing through New Jalpaiguri. People are very much disgusted and make serious complaints about these anomalies.

I urge upon the Government to look into these complaints seriously and take appropriate and prompt action to improve the services.

- (viii) **Demand for providing financial assistance to Government of Sikkim to meet the situation created by flash floods in the State.**

SHRIMATI D. K. BHANDARI (Sikkim): The Government are aware that the monsoon was very active in Sikkim from the middle of May, 1987 and it rained heavily and incessantly for weeks which caused considerable damage throughout Sikkim to public property viz. power and water supply installation, Government buildings and network of State Highways linking South and West Districts of Sikkim. The agricultural holdings in the four districts of Sikkim have suffered heavy damages and the crops of Maize, Cardamom, Ginger and Orange were also damaged by flash floods and land slides. In this way, total loss has been calculated worth several crores of rupees. The State Government has provided relief to victims of this heavy damages from its marginal resources available with them. The Central Government should sanction *ad hoc* grant of Rs. 10 crores to Sikkim immediately to enable the State Government to meet urgent expenditure till such time the actual damages are assessed by the Government. I understand that keeping in view of seriousness of situation the State Government has also requested for immediate financial assistance.

12.26 hrs.

[English]

ATOMIC ENERGY (AMENDMENT) BILL

MR. DEPUTY SPEAKER: The House will

[Mr. Deputy Speaker]

now take up item No. 12, Bill further to amend the Atomic Energy Act, 1962 as passed by Rajya Sabha.

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE IN THE DEPARTMENTS OF OCEAN DEVELOPMENT, ATOMIC ENERGY, ELECTRONICS AND SPACE (SHRI K. R. NARAYANAN): Sir, I beg to move:

"That the Bill further to amend the Atomic Energy Act, 1962 as passed by Rajya Sabha, be taken into consideration."

The Atomic Energy Act, 1962 provides for the development control and use of atomic energy for the welfare of the people of India and for other peaceful purposes and matters connected therewith. Under the Act, only the Central Government has the power to produce and supply electricity from atomic energy.

Section 3 of the Atomic Energy Act details the general powers of the Central Government with regard to the production, development and use of atomic energy including the production and supply of electricity from atomic energy. This Section is being amended to enable a body other than the Central Government to take up the work of production, development and use of atomic energy including the production and development of electricity from atomic energy. The powers to undertake research and development in atomic energy will still vest with the Government.

Section 22 of the Act is being amended to allow such a body to fix tariffs on lines similar to that adopted by the purpose of generating electricity from nuclear energy, to implement schemes for the generation of electricity in pursuance of national policy and to operate atomic power stations in consultation with the State Electricity

Boards, to enter into agreements regarding the supply of such electricity and to fix rates for and regulate the supply of electricity from atomic power stations.

Section 22(1) (b) of the Act is being amended to allow such a body to fix tariffs on lines similar to that adopted by the generating companies like NTPC.

Section 23 of the Atomic Energy Act vests in the Central Government the authority to administer the Factories Act, 1948 in relation to factories owned by the Central Government and engaged in carrying out the purposes by the Atomic Energy Act. The Section is being amended to extend the provisions of this Section to a body other than the Central Government set up for the purposes of generation of electricity from atomic energy.

The Bill will come into force from the date of receipt of assent of the President.

The proposed amendments are purely of enabling nature, made with the intention of creating a wholly owned Government company for the purposes of speedy execution of the goal of 10,000 MW by 2000 A.D. It is proposed to call the Corporation the Nuclear Power Corporation of India Limited. It will be our endeavour to ensure that the new Corporation functions as a self-sufficient viable organisation.

Safety has always been a major consideration with the Government; this will continue to be a major concern of the new body and the Atomic Energy Regulatory Board will continue to regulate and supervise all requirements relating to safety of nuclear power stations.

I commend the Bill.

MR. DEPUTY SPEAKER: Motion moved:

"that the Bill further to amend the Atomic Energy Act, 1962, as passed

by Rajya Sabha, be taken into consideration."

SHRI B. B. RAMAIAH (Eluru): Mr. Deputy Speaker, Sir, this is mainly intended for generation of power. Instead of atomic energy commission, they would like to have it done under the Indian Companies Act. The idea is probably they will have to raise more resources by bonds and also to give them more special concentration on the generation of power. There is also an alternative system to have a statutory corporation under an Act of Parliament like the ONGC. But I don't know whatever the Hon'ble Minister examined both the feasibility and the merits to find out which is the best out of the two.

The main thing I would like to bring to your notice is that in 1969 we started atomic power generation plan. Till today, we are not able to reach even 1500 MW. By 2000 A.D., we are aiming to generate about 10,000 MW. The idea is good. The ambition is always better. But what is the time it takes for implementation of these projects? We have implemented four projects at Tarapur, Kota, Kalpakkam and Narora. The two objects that we must look into are about location and safety. There are some observations regarding the location of Narora plants. The seismic zone point of view is one of the important things. Of course, you can do it. There is no difficulty. But cost-wise, other factors should also be taken into consideration. The second factor, I mentioned, is about safety. The first accident that happened at Three-Mile island in the United States of America had brought to the world's notice the atomic energy power generation and the possibility of nuclear radio-activity leaks and how to reduce the effects of radio-activity. So, cooling system should be improved even by the additional safety measures like molten sodium cooling system. Recently another accident took place at Chernobyl in USSR. It created much more fear in the minds of the people. We don't have the real facts about the number of people affected. But in the West European countries -

hundreds of miles away from that place - the people are really worried even to use milk because of the radio-activity effect on the grazing cattle, vegetables, foodstuffs and water. The contamination of the radio-activity is one of the greatest dangers.

Another question to be considered is about the cost of generation of power. We have some data available on the 1983—cost basis. So far, we have taken up 235 MW generation units as the basis at each location. We are planning to have at least four. The second alternative is 500 MW generation capacity up to two units in each place. In the first case, the estimated cost is Rs. 11,000 per KW for installation. In the second case, it is Rs. 10,000 per KW for installation. In both the cases, if you want to have 10,000 MW power generation capacity by 2000 A.D.—you have not even reached, 1,500 MW now - on the basis of 1983 costs, we require a minimum of Rs. 8,500 crores. And on the escalation basis, if we take into consideration the present cost, it will come to about Rs. 12,500 crores. At the same time this requires a huge quantity of heavy water. So far we have developed Ammonia exchange process and the Sulphide exchange process. For 2,000 tonnes of heavy water we require at least Rs. 5,000 crores of investment. We need at least Rs. 17,500 crores excluding the fuel and re-processing cost. On this basis about Rs. 14,00 to Rs. 15,00 crore investment is required for every year. I think this calls for the alternate resources for power generation process. The other alternative which we can think is the thermal power generation. We can go on producing more in view of the resources available, but there also is the resource constraint. Of course countries like Japan and West Germany have to take up atomic power because they have very limited alternative resources. But do we have to follow all what other countries are doing. With the hydel resources that we have, we can generate about 80,000 M.W. energy. By using hydel resource for power generation you can derive other benefits also like you can minimise the damages caused due to floods, droughts and improve the food pro-

[Shri B.B. Ramaiah]

duction and thus in turn provide employment.

Then the solar energy is the other alternative. Unlike other Western countries we have tremendous amount of solar energy. This is a non conventional resource which never gets exhausted I hope the Minister will examine these alternative resources. About 50 crores is involved in the power generation every year. This is a very substantial amount. We are short of fund and we also do not have much resources. The damage due to floods in this country also costs about thousand crores. So, I hope that the Minister will examine these alternatives in great detail. We can also think to go ahead under the Indian Companies Act or Statutory Corporation under the Act of Parliament like the ONGC. I am sure the Hon. Minister will examine all these things and take appropriate decision. With these words, I thank you very much, Sir.

SHRI MULLAPPALLY RAMACHANDRAN (Cannanore): Sir, I welcome this Bill being introduced by the Hon. Minister to further amend the Atomic Energy Act of 1962. I hope that the hon. Members from both sides will wholeheartedly support this Bill. Sir, the original Act of 1962 provides for the development, control and use of atomic energy for the overall welfare of the mankind. We had made it amply clear while formulating the Act in 1962 that the atomic energy will be used only for peaceful purposes. Under this present amendment, we have once again proved and we have reiterated our stand which we took in 1962. As per the 1962 Act the Central Government alone has the power to produce and supply electricity from atomic energy. This new amendment seeks to set up Nuclear Power Corporation or a Company which would design, construct and operate Nuclear Power Stations so as to meet the envisaged target of 10,000 M.W. of installed generating capacity by the year 2000 A.D. Moreover, Sir, this Company would be in a position to mobilise resources other than what is actually made avail-

able by the Government for the setting up of this Corporation.

Sir, no doubt, it is a Commendable programme. The decision taken by the Government is correct especially when we are moving towards the 21st century. It is well known that our country is lagging behind in the production of electricity. Of course, we cannot afford to depend on hydel power or any other source of energy except atomic energy to ensure adequate production and supply of energy to meet the requirements of our industrialists, agriculturists and also consumers. The per capita consumption of electricity in our country is around 180 KW only, while in the developed countries, the per capita consumption is around 7,000 KW. Not only that, even in our neighbouring countries like China and Pakistan, the per capita consumption of electricity is much higher than that of our own country. With the setting up of this Corporation, our target of producing a little over 10,000 KW of electricity by 2,000 AD could be achieved.

As we are all aware, financial constraints are the main impediment in developmental activities. And of course, here also financial constraints exist. Anyway, after the setting up of this Corporation, funds can be mobilised and raised with the help of debentures, bonds, etc. In this way, we can have money from the public. By the end of the century, the Corporation will be able to function on its own as a self-sufficient entity.

However, there is a widespread panic as well as fear in the mind of the common man that these atomic energy producing centres pose serious safety threats. After the Chernobyl disaster, these doubts and fears have doubled. Therefore, it will only be fair on the part of the Government to enlighten and prepare people to accept the unavoidable changes that a developing society demands. The entire world is conscious of the inherent dangers involved in nuclear reactors. Nevertheless, the world has not been deterred by such fears. It may be recalled that the General Secretary of

the Soviet Communist Party, Mr. Mikhail Gorbacheve made it amply clear, soon after the Chernobyl disaster that he could not conceive of a world without atomic energy. This statement of Mr. Gorbacheve is a source of inspiration for developing countries like India also. The Ministry must take adequate steps to meet the inherent dangers that may come out of these nuclear plants. We must be prepared, at all costs, to meet any eventuality.

Sir, I happened to read in some science magazines that the plant we are going to set up in Narora is in seismic zone and setting up a nuclear plant in a seismic zone is dangerous according to certain sections of the scientists. There are two theories on this issue. We have the example of a country like Japan, which has many nuclear reactors. And we know that the whole of Japan is situated in seismic zone. Whatever may be the conflicting theories, our Government should ensure fool-proof safety measures while setting up atomic plants.

We have to bear in mind that safety also requires proper decommissioning of the nuclear plants. The decommissioning process involves billions of rupees and requires a major effort on the part of the Government. My humble request is that the Government must bear in mind that safety measures will be taken by them at appropriate time before it is too late. So, once we go in for more atomic energy plants, we should bear in mind this aspect also.

Sir, I just would like to make a reference to my State of Kerala. The hon. Minister also hails from Kerala. Kerala is facing unprecedented shortage of electricity, this time. Of course, we solely depend on hydel power stations for generation of energy in our State. Since the monsoon did not favour us this time, we are facing acute shortage of power. And the vagaries of monsoon often deceive the people of Kerala also. So, it is my humble request that once the Minister takes a decision to set up new nuclear plants, the uppermost thing

which he should keep in mind is the acute power shortage of Kerala.

Before I wind up, I make use of this opportunity to compliment our great Scientists who have made it possible for us to look forward to a more scientifically advanced India.

SHRI HANNAN MOLLAH (Uluberia):
Mr. Deputy Speaker, Sir, this Atomic Energy (Amendment) Bill which is being discussed now is a very important Bill. The Amendment which has been proposed is just to constitute a company—the Atomic Energy Corporation—so that it can mobilise the resources. To the extent of generating more power and for further advancement, it is an appropriate Amendment. In this respect I support this Amendment. But at the same time I want to draw the attention of the hon. Minister to some of the points which come to my mind regarding this.

Today, the world is attracted by this growing Atomic Energy because of certain compelling reasons. The problem which forced every country to go in for atomic energy is mainly due to the limited long term reserves live coal etc which are not evenly distributed and are getting exhausted. This is equally important for the future generation also. We have to think on those lines also.

Secondly, there is a problem concerning the oil reserves also. Oil is not widely and proportionately distributed all over the world. This is also a problem. The cost of other resources is also increasing. The other methods which are being followed now, are also increasing the environmental pollution. So in that context, the attraction towards this atomic energy is growing day by day. Naturally, as a part of the journey, our country is also going in for the generation of atomic energy. Anyway we are still lagging behind many countries. They have achieved a lot. France is able to produce 64.8 per cent energy through this method. Belgium, 59.8 per cent. FRG 31.2 per cent. Japan 22.7 per cent. USA 15.5 per cent. And India is generating only 3 per cent.

[Shri Hannan Mollah]

These are the main reasons for which we are going in for atomic energy. I would say we should go in for that. But there are some negative sides also. When we are going in for an increase in the generation of atomic energy, we should keep in mind the problems which we will have to face. My friends from both sides have already mentioned some of these problems. The major concern is the growing number of accidents and the possibility of accidents when generating energy through these methods. In that respect, I want to know from you what are the steps the Government is going to take to strengthen the safety aspect, protection of environment and also other health hazards? What is the long term plan of the Government to look into these aspects?

Many experts also opine that we should have a Centrally constituted Safety Control Authority. What are the safety control measures that we have so far? How are we monitoring these activities? Can we form such an Authority to look into that aspect, because in future if we go in more and more for atomic energy generation, we have to coordinate the safety aspect; and that Authority also will be needed very much.

Recently, we have seen many reports saying that USSR also develops some new safe nuclear reactors. I congratulate our scientists and technologists who are developing things indigenously in this field. Still I want to know, for my own knowledge on the subject: What stage have we reached in our research, and how far will we go in the near future regarding this aspect?

There is another aspect regarding nuclear wastes from these atomic energy plants. It is also a big hazard. What is our plan to face that problem? I hope the Minister will clarify this.

My friend mentioned the de-commissioning costs. After 20 or 30 years we will have to spend a large amount of our

resources on this. What is our idea on this? In the future when we de-commission them, will there be any danger or risk to health and environment? I will be happy if the Minister kindly explains that also.

The next point is generation. Already, regarding the Narora plant, a lot of discussion we have seen in the papers. It was delayed in implementation. In which stage is it? What is the total spending of the Government? How can we overcome the problems there? What is Government's plan - I would like to know from the hon. Minister.

The hon. Minister had mentioned that at the end of the century, we would be generating 10,000 MW. It means that within 12 to 13 years we have to increase our present production six to seven-fold. From 1962 till date, we have reached only around 1500 MW; then, within 12 years how can we increase it six to seven fold? What is our perspective planning? How much fund are you expecting to raise through this Corporation? Will we be able to fund that project for the future? One plant takes 6 or 7 years. How many plants are you going to establish and commission; by which year, and what will be the capacity of those plants? What is your perspective plan? If you let the House know these things, we will be benefited.

My last question to the hon. Minister is this: Already, four plants are there, and you have in mind the establishment of new plants. During the last few years, we have seen that the experts from this Department have visited the Midnapore district of West Bengal.

We want to preserve our other resources and do not want to exhaust all the resources. So, in West Bengal, there are other resources, coal and other things. But as a part of the Central Government programme, they visited that District and selected some places; they also rejected some places; some new places were also selected. What is the present position of

that project and what the government is going to do on that project? It will be for the benefit of all if these points are clarified by the hon. Minister.

With these words, I conclude my speech.

DR. PHULRENU GUHA (Contai): I support the Bill. The Atomic Energy Act 1962 provides for the development and use of atomic energy for the welfare of the people and for peaceful purposes. Under Act of 1962, the Government of India had only the power to produce electricity from atomic energy. Section 3 now is being amended. According to the amendment, a body other than the Governments of India can take up production, development and use of atomic energy and development of electricity from atomic energy. The research is also being permitted. I wholeheartedly support this amendment.

It appears to me that this is a simple Bill. I welcome this Bill because it is a right step in the direction of the growth of atomic energy. In 1947 we were—subject to correction - producing only 1700 MW of electricity. We have the target of 72,000 MW of electricity production by the end of the 7th Plan. In our country per capita consumption is only 190 KW. In many developing countries the consumption is about 7000 KW per person. So, we have taken a right step and it is a constructive and progressive measure. I feel unless this new Board is established soon and is headed by a competent person along with capable staff, we will be able to achieve the target. When we discuss about the development of atomic energy we should not forget about the countries around us and even our neighbours, who are contemplating of production of atomic bombs. But India do not believe in destruction; we believe that the atomic energy should be used only for peaceful purposes and for the benefit of the humanity. At the moment, we are on the limited use of the atomic energy. We are going to organise the production of electricity only. India do not believe in destruction. So, we firmly

should follow our firm belief that India will not use atomic energy for anything else but for the benefit of people and for the benefit of the humanity. I further suggest that our scientists should do research to find out and more and more usefulness of the atomic energy for the benefit of the humanity

I would like to point out that many people even in many States are in doubt whether the atomic power plants can cause any danger. Therefore, I would like to point out that government should educate people before a plant is established in any area.

13.00 hrs.

When we are discussing about atomic energy I remember Dr Bhabha. I remember the great day when the institution for atomic energy was inaugurated at Bombay where a large number of scientists came from different parts of the world. It is a pity that he died in tragic circumstances so early in life.

At the end, I would like to say that - what my previous speaker has mentioned—there was an inquiry by the Department concerned about establishing an atomic energy unit in Medinipur district. They have enquired about Dantan and they have rejected Dantan for various reasons. But they have also gone through certain places of Contai sub-division. I had asked a question. They never say that they have rejected it, nor do they say that they have accepted it. We would like to know the position.

I again say that India should lead - not only in India but throughout the world - the idea that atomic energy should be used for peaceful purposes and for the benefit of the humanity.

With these words I support the Bill. At the end I would like to know from the Minister what the position of setting up of an atomic energy unit in West Bengal is.

SHRI SYED SHAHABUDDIN (Kishanganj): Mr. Deputy-Speaker, my heart still surges with pride when I recall the day and the moment when the first experimental reactor Apsara became critical. That was the result of a pioneering effort of our scientists. We had entered a new world, because nuclear power does represent a quantum jump in the history of mankind.

We know that development depends on energy. In fact, energy is an index of the level of development. And, we know that conventional sources of energy are slowly drying up, getting depleted. We have to tap other sources of energy, not only nuclear but other non-conventional sources like solar energy, wind power, tide power and now the new concept of tapping energy from the space itself through the application of laser technology funnelling the enormous energy that pervades from space, down to the earth to be used for our purposes, for transforming this world into a better place for mankind to live in.

But we must also take into account the growing hesitation, the growing dilemmas, the murmurs of protest against the unregulated and unrestricted expansion of nuclear power. Subject to correction, I would like to state that perhaps the peak in terms of installation of additional nuclear power capacity in the world as a whole, has been passed. If we talk in terms of the additional capacities being put up every year, then the annual rate of installation of additional nuclear capacity is slowly going down. The curve is flattening. The curve previously was very sharply upward. This, we have to take into account not only because of the high production costs, but also because of a greater sensitivity to the question of nuclear hazard.

As mankind comes to face more and more the question of disposal of nuclear waste and the de-commissioning of spent nuclear reactors as well as and not the least, the question of nuclear accidents, I am absolutely certain that we shall also introduce more safety measures, that we shall refine our technique of controlling

these hazards. Perhaps, we shall also take the preventive measures so that the impact of it on civilian life and on the economy and ecology of a country is minimised. We have to keep this aspect in mind. One reason why I welcome this Bill is exactly this. We have been demanding for a long time that there should be a separation between these two functions. The production, the running of nuclear reactors which may constitute a nuclear hazard and the authority which should regulate it from the point of view of safety. Now, if you are going to separate these two functions as has been envisaged under this Bill, perhaps that might lead to greater effectiveness of the safety procedures that we have initiated or that we might introduce tomorrow.

13.00 hrs.

[SHRI ZAINUL BASHER *in the Chair*]

Sir, the Bill as it is, is a very technical Bill. It merely seeks to authorise the Government not to retain monopoly on the production of nuclear power, in a sense to dilute the monopoly and in stages, through the establishment of authorities or corporations or Government companies for the production or generation of nuclear power. To this extent, it is indeed welcome.

Permit me to say that for a long time, the entire spectrum of our activities in regard to atomic energy, even those which are very mundane, very down to earth, very routine, have been shrouded in a sort of mystery. In my opinion, the Department is functioning with a lot of unnecessary secrecy. In certain aspects, technological secrecy is essential. I fully grant that. But there are many activities which all over the world are carried out practically in the open. Here, they are shrouded in a mystery, not because of any functional reasons, but if I may say so, primarily to shield the Department to insulate the Department from due accountability. Our politicians and our administrators have been in a sense mesmerised by the charm of nuclear energy. Therefore, I do not think we have paid in due attention to the efficiency aspect,

to the productivity aspect, to the accountability aspect of this scientific department.

Sir, perhaps by conceding the point that the monopoly need not exist, we are paying a little more attention towards these aspects. Monopoly always conceals inefficiency, makes for waste and inflates the unit cost for the consumer. The consumer here are the people of India and we know how the costs have been inflated. We know that the cost per unit generated by atomic power in our country as compared to the other sources is still very high. We are aware of the high cost over-run in all our nuclear power projects and if I may say so, long delays in the achievements of the national targets.

I would be very happy if the present achievement the total installed capacity as well as the capacity under installation which comes to only 3,000 MW can reach the national target figure of 10,000 MW by the end of the century. This means that we not only have to complete the nuclear power projects that we have undertaken, but also, roughly speaking, fourteen more nuclear power stations with a capacity of 500 MW each have to be planned and delivered by the year 2000. I have already pointed out the enormous cost. But I am more concerned with efficiency of performance. Are we in a position to guarantee to the nation that this target shall be filled and if so at what cost? Unless we tap other sources of energy, this nuclear power alone - if I am not wrong, shall amount to about five or ten per cent of the total energy availability in the country by the year 2000. Therefore, on the one hand, we cannot put all our eggs in one basket. On the other hand, we have got to see that each project that we take up is efficient and costwise it is competitive.

As I look at this Act, permit me to make a general remark on the conceptual scheme of this Act. I would call it a scheme of vertical integration. We have deposits of atomic mineral. So, from the time of survey of those deposits to the stage of proper exploration, exploitation of those deposits,

beneficiation of those deposits to the stage of extraction of the atomic mineral to its concentration and to its application in the reactors, it is all vertically integrated. Now, basically we are making two peaceful uses. One is for generation of power and the other is for the production of radioactive isotopes which are useful for mankind in many ways - for alleviation of disease as well as for increasing and promoting agricultural production. I know that there are also research reactors and they have undertaken and are undertaking up a lot of very valuable research activity. I do not mind the Department carrying on this research activity. That must be carried on. We must always be on the frontiers of knowledge. Yet, at the same time, I do not see any reason why there should be this concentration or centralisation in one Department. This is vertical integration. Why can't survey be handed over to the Geological Survey of India? Why can the exploitation of the deposits be handed over to the Mining Department? Why can't the extraction of the ore be purely an industrial activity? And of course, now we are envisaging that the generation of power can also be a commercial activity as it is in many parts of the world. Therefore, I welcome this as a step in the right direction. This sort of concentration also involves the Department in a lot of accessory activity. For example, even the electronic equipment which is needed for the Department is manufactured by the Department itself. All these linkages create, in my view, a lot of waste. Therefore, I would appeal to the hon. Minister, now that he is having a second look at the Bill, a time has come after 25 years - we passed this Act in 1962 - to review the concept, the concept of this vertical integration. I would suggest that there should be focus on the research aspect and that focus today is diffused, disturbed by all these additional accessory activities. Let the Department give us new technology, new ideas, new knowledge. Let these activities, which can be separated into industrial or commercial channels and can give rise to other industries for providing support to the field of nuclear technology, be passed

[Shri Syed Shahabuddin]

on to other departments. I am all for horizontal coordination. I see that this vertical integration that is there is somehow proving to be counter-productive.

With these words, I would request the hon. Minister to kindly take the reform that he has initiated to its logical conclusion and come back to us with a more comprehensive Bill. In the meantime, I support this Bill.

SHRI RAM SINGH YADAV (Alwar): I support the Atomic Energy (Amendment) Bill, 1987 and I hope, by inducting these amendments in the Act the hon. Minister will be able to achieve the objective to make a rapid development in the nuclear field.

Here I may narrate that in Rajasthan in the year 1973 one Canadian built reactor was installed and the power generation capacity of that reactor was 220 MW. But since 1981 the Rajasthan Atomic Power Station-I has been crippled.

In August, 1986 Mr. Srinivasan gave a statement to the newspaper 'The Statesman'. He expressed that the worst fears about the Rajasthan atomic power station's crippled first unit have now been confirmed with the Nuclear Power Board Chairman, Dr. M.R. Srinivasan, declaring that "we have found it is not possible to solve the problem with existing technology". These are the two units which were installed in Rajasthan, at Rawatbhata in district Kota - the first unit with the capacity of generating nuclear power of 220 MW, and the second also with the same capacity, that is, 220MW. The first unit is not working since March 1981. I have read in the paper just now that on 9th of August 1987 the first unit has been commissioned and it has started generating power. This is the statement of Mr. Kati published in Times of India dated 12th August 1987. I quote:

"The Canadian-designed reactor,

which has been posing problems ever since its commissioning in the early 70s resumed power generation last Sunday (that is, on 9th of August, 1987) and is now operating at 85 MW level, the Chairman of the nuclear power board, Mr. S. L. Kati said today."

Now, not only myself but even the people of Rajasthan State are still under the apprehension whether this first unit will be able to function satisfactorily and efficiently because our experience is that during the last six years the unit is not generating to the level which was expected, and for the last three years it has not been generating at all. No power was generated through this unit. Therefore, this Canadian-built reactor has proved that the technology or the reactor which was purchased from Canada was not on the sound basis. Even it has been expressed in some of the papers that this sort of reactor was not experimented even in the country in which it was built, that is, even in Canada itself. The prototype reactor which is installed in Rajasthan is the same type of reactor that has been demolished in Canada at Douglas. This is the report about that: "However the performance of our other power reactors has not been very encouraging either. Canada's own prototype CANDAU reactor at Douglas Point, Ontario was closed down in 1984 after it spewed 2,700 litres of heavy water into Lake Huron. The unit is being decommissioned to 'static state' because Canadian nuclear authorities say it is not worth spending the 100 million dollars required to replace the reactor's heat exchange system. India, of course, has not sought any Canadian help on the RAPS-I problem because of Ottawa's embargo on nuclear relations with New Delhi, the embargo was imposed following the 1974 Pokharan detonation. As a result of the Canadian pullout, the twin RAPS-II reactor was left half-complete and later completed by Indian engineers." So, in view of the fact that this installation of RAPS-I has caused a great concern to the people of Rajasthan, and we have been put

to a great loss in the field of electricity, because for the last three or four years, the farmers, the industrialists and the general public have suffered a lot, the question is whether the hon. Minister will make it very clear expressly in the House that he is confident that unit No. 1 will function efficiently and to the satisfaction of nuclear scientists, or he will have to demolish the unit No. 1 because the earlier report was that the only solution now left with the Atomic Energy Department is to decommission the unit No. one. So, will the hon. Minister explain what is the real position today as regards Units No. 1?

Now I come to unit No. 2. Similar is the case with this unit. This unit No. 2 is also equally erring. Today, the unit No. 2 is also closed. No generation of power is being made from unit No. 2. So, the experience shows that these two Canadian reactors in our State, RAPS No. 1 and RAPS No. 2 are not trustworthy, they are not reliable and not generating power to the extent to which they are expected. The people were expecting that there would be developments in the field of energy with the help of these two generators, but the result is otherwise.

Sir, in the Seventh Five Year Plan, Rajasthan has been allocated two more units based on indigenous technology, which is a parallel one available at Kalpakkam, near Madras. I would request the hon. Minister whether the Government will give assurance to the State and to the representatives of the States that these two units which are expected during the period of Seventh Five Year Plan will be commissioned at Kota in Rajasthan, in due time and the State of Rajasthan which is deficient in power supply will be able to recoup the power shortage by way of these two atomic reactors. Not only this, but the question is that these sort of technologies are causing a sort of doubt in the minds of the general public as well as in the minds of the scientists. In regard to the Unit No. 1, it is stated—

"A light water leak in RAPS-1's south

end-shield was first discovered in September 1981 during a scheduled shutdown. A series of engineering attempts followed to repair the 120-ton end-shield, fastened to the reactor vessel. After a chemical plugging method was tried out unsuccessfully, the cracks were sought to be covered with specially-fabricated seals."

Now, the question is that during the past six or seven years, engineers could not identify the defect and could not repair it and even today although the department is planning that they will be able to overcome the difficulty in RAPS-1. We are under an apprehension whether the Department, the nuclear scientists, will successfully be able to commission it so that the power may be generated to Unit No. 1. I may also add here that in regard to these nuclear power projects which are being installed in the Seventh Five Year Plan, I have come to know through the press reports that there was an offer of the Soviet Union and the Government of India has turned down that offer of nuclear plant. I would like to know from the hon. Minister whether this news which has appeared on 21st August 1986 is correct. I will quote the news item—

"India turns down Soviet N plant offer.

"The Department of Atomic Energy (DAE) has turned down a Soviet offer of nuclear reactors to India, according to official sources.

The offer of two reactors each of 440 MW electrical capacity, had been evaluated by DAE after the visit of a technical team to the USSR in 1983".

So, I would request the hon. Minister to clarify the position of the Atomic Energy Department in this respect also and whether we can utilise the technology offered by the Russian Scientists or not and whether the Government is willing to accept it or not. With these words I support the Bill.

SHRI SATYENDRA NARAYAN SINHA (Aurangabad): Mr. Chairman, Sir, I rise to support this Bill. It is a step in the right direction. Sir, this Corporation has been set up to run numerous power plants planned for the future as well as the three operating ones and two under construction. The Government by giving effect to the proposal to set up this Corporation has only renewed its commitment to nuclear energy. Sir, at this moment, we recall the foresight of Pandit Jawaharlal Nehru who had made the commitment to nuclear energy for peaceful purposes. Panditji and Dr. Bhabha thought of utilising this energy for peaceful purposes at a time when it was only in the minds of perspective scientists starting from the great nuclear scientist, Mr. Enrico Fermi. Now, Sir, we are talking of looking ahead. Panditji looked ahead in 1960s in to 1980s and 1990s and as a result thereof, we are today firmly established in the field of nuclear energy and almost we have a leadership in this respect and the fact that we have decided or we have planned for 10,000 megawatt by the year 1990 is a proof of our positive affirmation of leadership.

Sir, some doubts have been expressed as to whether it will be possible for us to achieve this anticipated power of 10,000 megawatt, whether it is possible for us to increase our capacity 10 times from 1000 megawatt to 10,000 megawatt. This doubt has been expressed because it has been stated that there has been a long delay in setting up the plants, the plants that are functioning had an uneven manner of performance and there has been a high cost overrun in Kalpakkam and Kotah nuclear power plants. We had encountered the difficulties at the heavy water plants. But I think we have overcome all this and we are set to achieve our commitment of nuclear power of the magnitude of 10,000 megawatt and I am confident that our scientists and engineers would be able to build 12 new nuclear reactors in the country for achieving this and the standard designs of 235 megawatts and 500 megawatts reactors and associated power equipments are ready. We have also the backing of the

industrial houses in the form of expertise, which are prepared to build various components of the nuclear reactors. All that is necessary is to place timely orders. Now, if we place the orders, we need allocation of funds and exactly that is what was worrying our Government and they have come up with the proposal to set up Corporation which will not be in a position to raise additional resources because it will be possible for the Government to increase this budgetary support due to resource constraint. Now, this 10,000 megawatt plant will cost us about Rs. 13,500 crores and I do hope that the Corporation will be able to raise this resource. Going by the experience that we have recently of the various Corporations which went into the field for raising loans which were all over-subscribed, we have no doubt that the Corporation will be able to raise the requisite amount and we will be able to fulfil our targets.

Now, Sir, some points have been raised that the nuclear energy is very expensive, costly compared to others. But if you go into this whole question, in the ultimate analysis it is the nuclear energy with which we have to live and which can help us raise the standard of living of the people. If you go by rate of cost of conversion of solar energy into chemical or vegetation into any other energy, it is not more than 4% but with regard to Solar cell the conversion rate is about 8%. If you want to produce 1,000 megawatt of electricity from thermal power, you need 1.18 million tonnes of coal. Whereas for producing the same amount of energy, you will be requiring only 20 grams of enriched uranium. It is therefore easy to go in for nuclear energy in which we have made a lot of progress. Actually, we have gone ahead of many other countries. We have gone from second generation to third generation. Today we have got a working small reactor using thorium which no other country is having. We have the experimental reactor at Dhruva which is a wonderful achievement and a tribute to capabilities of our young scientists. Even the Americans are anxious to inspect our reactor and learn

about it. It is considered to be a marvellous achievement of Indian scientists.

In regard to the question of safety measures, I am sure, the hon. Minister will be able to dispel the anxiety or apprehension of the people. All that I can say is that we have been using our reactors in our country at Trombay for 25 years, another for 18 years at Tarapur, then another at Kota for 15 years and the one at Kalpakkam for 4 years. They are working satisfactorily. We have been told that our reactors are using liquid sodium, which remains liquid even at a temperature of 500 degree. centigrades and is circulating through the reactor to take away the heat and deliver it to the boilers. This is supposed to be a very dangerous material, if it gets into contact with moisture or air as it would explode in a fraction of second. But the fact that it has been there without any mishap, is a great tribute to our scientists. I am told that the plant is so designed that if there is a chance of getting this liquid sodium coming into contact with moisture or air, the whole reactor will stop working automatically. Besides additional safety system that we have developed in the country, we have developed double containment system which other countries have not. That is, we have two walls instead of one, which are encircling the plant.

Our scientists are also aware of the risk involved and the safety requirements. They have been assuring us that they are taking all possible care to see that our nuclear plants work satisfactorily and no mishap takes place. They are also promising us safer reactors. Reactors that are "user friendly" are being developed so that even where the human element fails, the reactors will not. This shows that our scientists are aware of the danger and, therefore, they are trying to take all possible steps to ensure those plants from any kind of leakage. Therefore, we take this opportunity to pay our tribute to them.

Now, Sir, I will come to the Corporation itself. I would like to ask some questions in this regard. What will be the relationship

between the employees who will be working in the Corporation and those who are working in the Government Department like Bhabha Atomic Research Centre or Atomic Energy Commission. Then, the Corporation is going to have about 12 nuclear power stations. Already 3 are working and 2 are under construction. So, is it going to be a giant Corporation. And naturally it will have large economic clout. Has the Government thought over the matter whether these benefits that will accrue will be only to the employees of the corporation or also for those working in the Government offices? Whether a proper nexus will be established between them? And at the same time, a nexus between the engineers and scientists has also to be established because, as you might know, the cooperative spirit has been built up over the years. The scientists and engineers are acting and consulting each other and they have actually given us this pride of place in the field of nuclear energy. They are in a way the leaders in this respect. As I have told you that we have produced the third generation reactor by using Thorium which no country in the world has so far done.

Now, I have heard that there is some kind of discontentment among the employees after the selection of chairman and all that. The cooperation which you are receiving is rather sullen. But I am told that there is internal dissensions and discontentment among the scientists and engineers. The spirit that was built up by Dr. Bhabha is likely to be diluted which may impede our progress in this field and we may not be achieving the target that we have set before us of setting up of reactors which would generate 10,000 MW of nuclear energy.

Then Sir, I am told the salaries of our nuclear scientists who achieved this degree of self-sufficiency continues to be very low compared to other services particularly that of IAS. This is another cause for discontentment.

Then about the internal harassment of

[Shri Satyendra Narayan Sinha]

the scientists. I am told that a top nuclear scientist happened to accept an award from Kerala University without obtaining prior permission or sanction of the Government and he was asked to explain why did he accept that? This should be taken as some kind of incentives to the scientists. This is also a cause of resentment. I am told those scientists who have been working in this field and have given this third generation technology do not have even basic facilities of accommodation and residence. This is another matter where there is some dissatisfaction.

If what I am saying has any truth in it, I would appeal to the Minister to sit with the scientists and engineers to find out their grievance and solve them so that once again you get all the cheerful and willing cooperation that they have been giving to the Government and the job. As already said, the links between scientists and engineers should continue to be close and it should be made further close. That should be our anxiety. I hope, the Minister will take into account this point.

Some scheme may kindly be drawn up to see that fruits of the labour of the scientists and engineers, those working in the Government or working in the corporation should be shared equally. They all be benefited equally and see that those who are working in the Government departments are not deprived of this. This will be the responsibility of the Government to see that this is done. The Minister may also kindly inform us about his idea, whether the Corporation is going to work with a greater autonomy and will not have the supervision, the control which the Government is exercising today over the research centres that are working under them - for instance the Bhabha Atomic Research Centre, Indira Gandhi Nuclear Research Centre at Kalpakam and the Advanced Research Centre at Indore - or whether the Government will be exercising an overall supervision and a strict control over the working of the Corporation.

In the end I would only wish that the spirit that helped us achieve this efficiency, the excellence in the field of nuclear energy would permeate in other fields of life also, so that we may achieve excellence in those fields also.

With these words, I support this Bill.

SHRI K. R. NATARAJAN (Dindigul): Mr. Chairman Sir, on behalf of AIADMK I welcome the Atomic Energy Amendment Bill 1987. The Atomic Energy Commission was set up in 1957 under the chairmanship of Dr. Homi Bhabha. The atomic energy has been developed by Rutherford. In 1962, the Atomic Energy Act was passed with a purpose of control, development and peaceful use of the atomic energy for the welfare of the people.

Now the present Bill has been brought to set up a nuclear power plant. The purpose is that the Corporation can generate money from the open market. There may not be any financial constraint on the Government to generate money. With this view the Amendment Bill has been brought. This is a laudable step. The aim of the Bill is to achieve 10000 MW by the end of 2000 AD. This should be achieved anyhow.

It is said that Pakistan is on the verge of making atom bomb. We should also be prepared to make atom bomb if necessary. The atomic power plant set up at Kalpakam in Tamil Nadu is functioning very well. There should be an expansion of two more units with 235 MW. That may be useful. Atomic plants should be set up in each and every State. Then only 10,000 MW can be achieved by the end of 2000 AD.

With these words, I conclude.

[Translation]

SHRI VIRDHI CHANDER JAIN (Barmer): Mr. Chairman, Sir, I support the Atomic Energy (Amendment) Bill, 1987 which has been presented in the House.

In fact, there is a need for a corporation. Without it we will not be able to mobilise resources. We need more resources in order to achieve the target of 10,000 MW of atomic power. What I mean to say is that the generation cost of atomic energy at the time of construction of Tarapur Plant, Kota Plant and Kalpakkam Plant was Rs. 1,600, Rs. 3,000 and Rs. 5,000 per KW respectively. In Narora Plant now under construction, the generation cost will come to Rs. 8,500 per KW. The cost is going on increasing and that is why we require more resources. In order to mobilise more resources, setting up of a corporation is a right step. I want that the corporation be set up soon and thereafter arrangements be made to mobilise more resources from the public by floating loans. This should be done in such a way that the corporation runs in profit and not in loss like other public undertakings. More efforts are required to be made to achieve this end.

I take this opportunity to make one more submission. As Shri Ram Singh Yadav has also stated, the first plant established in Kota in Rajasthan has started functioning from 9th August and as per information received, out of an installed capacity of 210 MW only 90 MW energy is being generated. Therefore, I want to know whether the Kota Atomic Plant will be able to function smoothly or not? Since after a gap of 5 years it has now started working after repairs, whether it will remain in working order to produce 150 to 200 MW energy instead of 90 MW being generated at present. The hon. Minister is requested to furnish this information in his reply.

The second plant at Kota is functioning very well. My colleague Shri Yadav has said that its condition is miserable, but it is not so. At present, the plant load factor is 60 to 70 per cent which is required to be further improved. Sometimes it takes one week or a month to set right a plant when it has to be shut out or closed. I would like to know the situation under which we have to shut out any plant. If the plants function regularly, the acute shortage of power could be met. Therefore, it should be

ensured that these plants do not go out of order for at least one year after repairs. The power position in Rajasthan becomes very acute when both the plants remain closed. I, therefore, want that at such a juncture, the Central Government should provide electricity to Rajasthan either from Singrauli or from some other places to compensate us. The electricity department concerned should also be directed to supply us power at the time of such a crisis.

I would like to mention that it was due to the foresight of Shri Jawahar Lal Nehru, the architect of modern India, and Shri H.J. Bhabha that India entered the nuclear world. Even after entering the nuclear world, India is at the 7th position among the seven nuclear powers. France, Germany and Japan have, in fact, made very good progress in this field. It cannot be said if we will be able to achieve the target of 10,000 MW set for this purpose. The future appears to be uncertain. You have decided to set up another Atomic Energy Plant in Kota. I want to know when it will be set up? It has not so far been commissioned. What is the scheme for this? Will it be completed by the end of Eighth Five Year Plan? The country is facing a crisis in the matter of electricity. By now we have been able to generate 51,000 MW of power and a target of 72,000 MW has been set in the Seventh Five Year Plan. If we are able to generate 10,000 MW nuclear power, it will be a great success. Now the per capita consumption of power in our country is 180 KW whereas in the developed countries it is 7,000 KW. We wish very much to supply power for 10 hours a day to the farmers in Rajasthan, but we are not in a position to do so. The modern age calls for making development in the fields of power and energy. Without it, we will not be able to make any progress both in the agricultural and industrial fields. If we want to brighten our future, we will have to make progress in the field of energy and power. We should well remember that our nuclear power is meant for peaceful purposes. If Pakistan makes a nuclear bomb, then we will also have to go for it. When countries like Pakistan are advancing in the field of

[Shri Virdhi Chander Jain]

nuclear power, India will also have to acquire the necessary capability in this field. If neighbouring countries are able to acquire the capability to make a nuclear bomb, it will be a weakness of our country if we remain behind in this field. With these words, I support this Bill.

13.54 hrs.

[SHRIMATI BASAVARAJESWARI *in the Chair*]

[English]

SHRI SRIBALLAV PANIGRAHI (Deogarh): Mr. Chairman, Sir, I rise to support this Bill. This is a very simple Bill. It seeks to amend the Atomic Energy Act, 1962. Although quite simple in nature it has lot of significance. In fact, it is of an enabling nature. This amendment is intended to vest authority with the Government of India to establish a corporation as a Government company to be entrusted with the work of generation, distribution and management of nuclear power.

Madam, Mr. Gorbachev, the Russian leader, has remarked very recently that: I can't conceive of the world without nuclear power - without nuclear electricity. Such is the importance that nuclear power has assumed.

While supporting the Bill, at the outset, I would like to pay glowing tributes to Pt. Jawaharlal Nehru, the chief architect of independent India and also to Dr. Homi Bhaba with whose efforts the nuclear programme started in India. By now, India has been placed well on the nuclear map of the world. My salute to them.

Madam, as I said, the purpose of this Bill is very limited, that is to establish an independent organisation to work in the field of power generation, management, distribution of nuclear plants and all that. This means that the Atomic Energy Commission will be completely free to devote itself

to research and development of atomic energy. Of course, our intention is very clear that it will be for peaceful purposes.

We have a programme of producing 10,000 MW of nuclear power by 2000 A.D. We have, at present, four nuclear power stations. Some more are coming up. All these things require good management. It is good on the part of the Government of India to think of a corporation to manage the nuclear power stations. But I would request the Hon'ble Minister to ensure proper management of this corporation. As you know, Madam, in the public sector because of mismanagement, several units are incurring losses. Let it not be added to that list. This new corporation, yet to be born, should not have the misfortune of sustaining loss and become a liability.

Madam, we are short of finance for this programme. Naturally an independent organisation like this will be free to go to the people for raising resources by way of floating bonds. That is quite welcome.

14.00 hrs.

Now, I will come to the power position of our country. What is the power position? Of course, we have made a lot of stride in this direction. When India achieved Independence, only 1,700 MW of power was being generated in this country. But what is the progress over the years? Now, we are generating more than 50,000 MW of power. Although much we have achieved, there is no room for contentment. Still our per capita power consumption is as low as 180 KW as against 7,000 KW in developed countries. Madam, see the difference, 180 K.W. of power for consumption per head in India as against 7,000 K.W. in developed countries. Even in China and Pakistan, our neighbouring countries, it is higher than that of India. Therefore, we should take it as a challenge and should take steps to generate more and more power. As you know, in several States power crisis is there. And again, this year due to the drought, the hydel power stations are running into difficulties and because of this the power crisis

will be further intensified. So, Madam, by the end of the Seventh Five Year Plan the shortfall will be of the order of 10,000 M.W. We will be adding about 22,000 M.W. of power during the Seventh Five Year Plan, that means we will be running short of another 10,000 M.W. of power. So, naturally, we will have to step up our activities in the field of power generation. The Scientists claim that the nuclear power generation is cheaper than the thermal power. Immediately we are reminded of the Chernobyl explosion that took place last year. Therefore, I would say that necessary safety measures are required to be provided in our Reactors. In fact this should go into the system of the reactor so that there will be absolutely no danger of such explosions.

Now, in Orissa there is no nuclear power station. As you know, Sir hon. Members from Orissa have been agitating both inside and outside the House. Orissa is passing through the power crisis. In fact it is passing through power famine for the last several years. In order to fight the backwardness in Orissa, a proposal should be made to set up nuclear power station there. I would request the Hon. Minister to give personal attention to this and this proposal should materialise as early as possible.

Now, when we are discussing about this atomic energy, we should look around the world. Country after country is going nuclear. As you know, our immediate neighbour Pakistan is leaving no stone unturned to become nuclear. Even recently it was published in the Press that they were engaged in some act of theft in the U.S.A. in this area. So, in these circumstances it is time for the Government of India to re-consider their stand, whether

India should not go nuclear and should not possess bombs. Of course, as a non-aligned nation, we have a role to play and we have played the role of maintaining peace in the world. Of course, India is following the principles of truth and non-violence but that does not mean that when

others in our neighbourhood are going nuclear, we should not go nuclear and we should not possess bomb.

There is one heavy water plant under the Department of Atomic Energy and that is a sick plant. There is a lot of scope for improvement. It is a good plant but the sickness of the management is reflected in the working of the plant. Therefore, in order to make it healthy there should be healthy management. Right type of people should be placed. I would request the Hon. Minister to take immediate remedial measures in this direction so that this heavy water plant does not become sick.

With these words, Madam, I support the Bill. This Bill is a very simple but at the same time it is quite a significant Bill. It has far reaching consequences. With these words, I support the Bill.

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE IN THE DEPARTMENTS OF OCEAN DEVELOPMENT, ATOMIC ENERGY, ELECTRONICS AND SPACE (SHRI K. R. NARAYANAN): Madam, I am very grateful to the House for the unanimous and enlightened support given to this Bill. The Members who spoke recalled the vision of Shri Jawaharlal Nehru and Dr. Bhabha for conceiving this programme of atomic energy and for encouraging it. The Bill that we have brought here today is in implementation of the objectives of this noble programme, in order to implement our atomic programme in such a way that the people will have sufficient sources of energy for the economic development of this nation. The case for atomic energy needs, perhaps, no justification today, though a cautionary note has been struck by some or almost all the members that the need for safeguarding against the dangers involved in atomic energy must be taken into full account. Some of the members quoted the words of General Secretary Gorbachev after the Chernobyl disaster that 'he cannot conceive of a world economy without nuclear energy'. There are other state-

[Shri K.R. Narayanan]

ments also. The Chancellor of the Federal Republic of Germany said that German economy will collapse without recourse to atomic energy. Even the Conservative Minister for Energy of Britain said that we would be doing a disservice to future generations if we do not meet the challenge of atomic energy and utilise it for peaceful purposes.

We, in India, have the distribution of sources of energy in such a way that we cannot depend on any one source of energy only. The distribution of coal, of water resources and the possibilities of exploiting in the conceivable future, solar energy, wind energy, wave energy, etc is such that we must have recourse to various sources of energy at the same time. I cannot conceive of a time when India can dispense with nuclear energy. Our reserves of coal are not unlimited. Even a country like the United States with immense reserves of coal is producing atomic energy for its needs. Our resources of water are also not unlimited. Nor are they reliable enough for production of hydro-electricity so that we can depend only on hydro-electric sources. But, as you all know, we are developing all these resources to the fullest extent possible. At the same time, we know that we must also rely on atomic energy and also the future prospects of utilising solar energy for our developmental needs. Therefore, there is no imbalance in our approach.

In fact, when we reach this 10,000 MW of nuclear electricity by 2000 AD, we would have only 10 per cent of our electricity through this source. The world average today is 16 per cent that is 16 per cent of energy produced in the world today is from nuclear sources. And countries like France have 70 per cent of their electricity through nuclear power. European countries are going ahead with exploiting this source, in spite of the dangers that are evident. Therefore, I do not wish to expatiate further on the necessity for a country like India to produce nuclear energy. This is

not only a source of energy, but if I may say so, it is also symbolic of the scientific advance that this country is making, symbolic of the capability we are achieving in the frontier areas of science, which would have not only significance for energy needs, but our national needs as a whole.

I shall now like to mention the most important points made by almost all the members about the need for safety measures. Now, we in India have been aware, right from the beginning about the need for safety while developing atomic energy. In fact it is amazing how Dr. Bhabha had thought of it long time ago when the world had an enchanted approach to atomic energy, not thinking on its ill effects at all. He had taken into account this aspect and from then on, we have been building into our own atomic reactors, all the safety measures. Today, we have achieved greater capability in the field of safety technology and we are building it almost on modern features for avoiding the ill effects of an explosion or something like that which might take place. I do not wish to enumerate all the technological features that have been incorporated into our reactors, whether they are double containment system or anti-earthquake devices, etc. Therefore, even the technological point of view, the Indian reactor is one of the safest in the world. On the top of it, those who man these reactors, those who run these reactors are not ordinary technicians. They are highly qualified people. Whether it be the Three-Mile Island accident or the Chernobyl accident, it was the human factor that was responsible for it. Actually in the Soviet Union today, those managers who have been responsible for the accident at Chernobyl reactor are being tried in the court of law. Therefore, the need for highly qualified operators in reactors is one of the most important things. We are lucky that it is highly educated and competent people who are manning these reactors. Therefore the human error coming in has been minimised to the maximum extent possible. My own feeling is that all the studies that have been conducted after Chernobyl have shown that the results of

these accidents have been highly exaggerated. They were tragic but still exaggerated. A Dam burst or the Bhopal tragedy or a gas explosion have caused in the world much greater human suffering than what Chernobyl did.

I was only a week ago, in Kiev in the Soviet Union which is just 150 kms. from Chernobyl. This was a city which was affected by radiation. I could get from them the first hand information. I mean from the authorities then. Except for evacuating the children are taking various other measures, such as looking after vegetables, water, etc. there was no panic in the city. In fact a very little trace of radiation is left. What I am saying is that the radiation effect of Chernobyl plant has been highly exaggerated. I am not talking only because of my personal visit to Kiev. There is a statement which was made by Dr. Hans Blix, the Director-General of the International Atomic Energy Agency who had said about Chernobyl. He said "the results reveal that the radiation dose stemming from the accident during the first post accident year even for the most exposed groups, is not greater than, say the difference between the natural dose you get in Vienna and that which you get in the North of Austria, where the prevalent granite foundation produces more radiation."

He is talking about the radiation effect in Europe by Chernobyl accident. Therefore, while nuclear reactors can produce such tragic accidents, we should not exaggerate and we should not make it a reason for shrinking back from a full exploitation of those very valuable sources of energy for our economy and for the benefit of our people.

In India, apart from this, our Prime Minister has given very strict instructions that before any reactor is commissioned or built, we should first of all look into all possible safety measures and device engineering and other methods into the plants for making it a safe reactor, what they call the "fail safe system". We have also introduced organisational measures. Two

important Committees have been set up recently. One is what is called National Emergency Response Committee. This is a High Level Committee which is looking into measures for preventing the ill-effects of any accident in a reactor for the community as a whole. A similar Committee is being set up in the regions where there are atomic reactors in four of our States. Therefore from the point of view of safety, the Government are taking every possible measure in anticipation of such unlikely accident to prevent the ill-effects of such an accident for the community as a whole and for those who work in those establishments.

Now, I would like to turn to some of the issues raised here. First of all, is it possible to reach the target that we have set before us? Today we produce only 1230 MW of atomic electricity. Can we reach 10,000 MW by the end of this century? We have prepared a perspective plan for this purpose and we think that it is feasible to achieve this target provided, we have sufficient resources. We have one organisational system and management system which can take up this challenge. As you know, there are already three atomic reactors in our country. Added to them, Narora, Kakrapara, Kaiga and Rajasthan are under construction. By 1995, all these reactors—even before that, some of them will be completed the latest date is 1995—these reactors would be commissioned, and they would be functioning. We hope to get about 3110 MW of atomic power by that time. For the future we have envisaged the setting up of twelve 235 MW reactors, and ten 500 MW reactors. It is perfectly feasible for us to do this, certainly feasible technologically. The time for setting up a reactor in India is about 8 to 8½ years. In countries like USA, they take about 12 to 15 years for setting up an atomic reactor.

We have also standardized the construction of our reactors, and we are taking preliminary action well in advance for preparing the site, for ordering the heavy equipment etc. for the construction of a reactor; and, therefore, we believe that it

[Shri K.R. Narayanan]

would be possible to execute this ambitious plan within the period visualized.

What is really lacking, or what is difficult is funds. One of the reasons for setting up this Corporation is to introduce flexibility, and to give freedom to the company to raise funds from the open market. I think this is one of the important reasons for setting up this Corporation, so that the Corporation would be flexible and autonomous in its operations, and it would have access to the capital market in this country. Several Members mentioned that considering the response to many of the Bonds which have been issued by public sector companies, it would be possible for us to mobilize these resources for executing this plan. We believe that by 1995, this Corporation would be self-sufficient. It would not be necessary for the Government to give money to the Corporation. It would be able to go on its own.

I am really happy that all the Members have given their full support to this. There have been many specific issues taken. I am afraid that there is something happening in the other House; but still I will run through it as fast as I can. Rajasthan has been in the minds of many Members, especially RAPS-I reactor. I want to inform the House that this is really not a fully commercial reactor. It was a prototype reactor; it was a reactor which was not fully developed. It was established first time in Rajasthan; and, therefore, our people had to work on it, learn the technology and improve upon it. This reactor is functioning at the moment, because cracks have been repaired, and it is working at 90 MW electricity capacity.

SHRI C. MADHAV REDDI (Adilabad): Is it a fast breeder?

SHRI K. R. NARAYANAN: No; it is not a fast breeder. It is what is called a heavy water pressurized reactor. It may not be possible, by this kind of sealing of the cracks, to repair it fully. We may be able to

work it at a lower capacity; but if we wish to work it at full capacity, the end-shields themselves might have to be replaced. This is a question into which a high-power technical committee is looking. The other reactor in Rajasthan which was working almost at 75% capacity, tripped day before yesterday. It is a minor thing.

I am told by the scientists and the engineers that within two or three days they would be able to correct this problem and recommission the reactor again; and Rajasthan is going to get two more reactors. Therefore, I don't think there will be any kind of a complaint from Rajasthan on this score.

Many members have talked about reactors being established whether it is in Kerala or Bengal or in Orissa. As the House knows, a Site Selection Committee has gone into this and recommended various sites. This is under the consideration of the Government. No final decision has been taken. But all the recommendations and the claims of various States are receiving the full attention of the Government.

SHRI MULLAPPALLY RAMACHANDRAN: Did you send any team to Kerala?

SHRI K. R. NARAYANAN: At the time of Site Selection Committee, it had been to Kerala also.

DR. CHINTA MOHAN (Tirupati): Have you selected Nagarjunasagar site for atomic energy sector?

SHRI K. R. NARAYANAN: This is one of the sites which is in the list. So many sites have been recommended and the government have to take decision to which sites are most suitable.

SHRI HANNA MOLLAH: Have you taken into consideration the Midnapore District in West Bengal or rejected that?

SHRI K. R. NARAYANAN: Nothing has been rejected; everything is under consideration.

SHRI MULLAPPALLY RAMACHANDRAN: Narora inside the Gangetic plains will serve as a seismic zone.

SHRI K. R. NARAYANAN: The whole magnetic plain is in a sense seismic zone; may be further south also. But what is important is that we have built into the Narora plant anti-earthquake devices developed at the Roorkee Institute; and it has been mentioned by some of the members that earth-quake is not necessarily a prohibiting factor. You yourself have mentioned it for the establishment of a reactor. In Japan, every day, there is an earthquake but all the reactors are safe there. So, we have taken every precaution. That is one of the reasons why the cost of the Narora Reactor is a little higher than otherwise it would have been.

Now one member has talked about efficiency and the need for the Corporation to work efficiently. I think efficiency has been one of the prime considerations for setting up this Corporation. I must say the people who go from the Atomic Energy Establishment to this new Corporation are a particularly dedicated sets of scientists and technicians, that is one of the reasons why we have been able to make this remarkable achievement in the field of atomic energy development at a time when nobody in the world was prepared to give us any technology or any other sort of assistance. Therefore, we have this tradition. In the selection of the Chairman and other officers, Government will certainly keep in mind this very prime consideration for choosing people who are efficient and dedicated. And the connection between BARC, which is a research organisation and the nuclear power corporation would be very close, intimate and dynamic. In fact, it is research that is the inspiring source of all this. Unless we continue our research vigorously and push it forward neither the reactors nor our isotopes nor other various programmes would go forward. Therefore, the Government is fully conscious of the need for providing power, a source of power, which is cost effective. I should like

to go into this a little. In fact, we have compared the relative cost of thermal hydel and atomic energy. The cost are really comparable except for hydel which in some cases is somewhat cheaper with thermal it is only comparable with the present cost of producing it. In future we might perhaps be able to reduce the cost of producing nuclear power because of standardisation, because of technological development, etc. I have no doubt that atomic energy will remain a necessary element, in fact an expanding factor in India's economic sector and this Corporation will make, with the support of the House and with the support of the Indian population, a major contribution to development of energy providing at the same time all the safeguards that are necessary.

MR. CHAIRMAN: The question is:

"That the Bill further to amend the Atomic Energy Act, 1962, as passed by Rajya Sabha, be taken into consideration."

The motion was adopted.

MR. CHAIRMAN: The House will now take up clause by clause consideration of the Bill.

The question is:

"That Clauses 2 to 5 stand part of the Bill."

The motion was adopted.

Clauses 2 to 5 were added to the Bill.

MR. CHAIRMAN: The Question is:

"That Clause 1, the Enacting Formula and the Title stand part of the Bill."

The Motion was adopted.

Clause, 1 the Enacting Formula and the Title were added to the Bill.

SHRI K.R. NARAYANAN: Sir, I beg to move:

"That the Bill be passed."

MR. CHAIRMAN : The question is:

"That the Bill be passed."

The Motion was Adopted.

14.32 hrs.

STATEMENT RE:ARREST OF SOME WOMEN AND INJURIES TO ONE DURING WOMEN'S DEMONSTRATION ON 26.8.1987 AGAINST RISE IN PRICES OF ESSENTIAL COMMODITIES

[English]

THE MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND MINISTER OF STATE IN THE MINISTRY OF HOME AFFAIRS (SHRI P. CHIDAMBARAM): I wish to share some information with the honourable House, pursuant to the request made yesterday regarding a Morcha which took place yesterday at about 1100 hours. According to the information available with me, there were about 700 women participants from various women's organisations. They took out a procession along Jai Singh Road. Police cordons had been placed on Ashok Road just before Patel Chowk. CRPF lady police and lady police from the Delhi Police had been deployed. The demonstrators attempted to break the police cordon and march towards Parliament House. However, since prohibitory orders under Section 144 Cr. P.C. were in force in that area the Police had to arrest them and take them to the Mandir Marg Police Station. While attempting to break the cordon and while being arrested a number of participants resisted the police personnel.

According to my information, one demonstrator received injuries and was dis-

charged after first aid. I may also inform the House that a lady Sub-Inspector, two Sub-Inspectors of Parliament Street Police Station and 14 other lady police officers suffered minor injuries.

Two hundred and eighty-four demonstrators were arrested under section 188 IPC for violation of prohibitory orders. Later on they were let off by the Court after an admonition. Three hundred and fifteen demonstrators were detained under the Delhi Police Act they were released after a short while.

I would like to assure the hon. Members that the Government is keeping a close watch regarding the prices of essential commodities and will take every possible step to keep the prices in check.

SHRIMATI GEETA MUKHERJEE (Panskura): He says that only one lady was injured. Let me tell you.

SHRI BASUDEB ACHARIA (Bankura): That is not a fact. *(Interruptions)*

SHRIMATI GEETA MUKHERJEE: Yesterday, one lady Shanti Devi was injured and the stitches had to be made on her head. Our leading functionary National Federation of Indian Railways....

*(Interruptions)***

MR. CHAIRMAN: Not allowed. We will go to the next item. Please resume your seat.

*(Interruptions)***

MR. CHAIRMAN: I call Mr. Janardhana Poojary and Mr. Narayan Datt Tiwari to move that the Bill to provide for the levy of a tax expenditure incurred in certain hotels to be taken into consideration.

*(Interruptions)***

MR. CHAIRMAN: I heard you. Please