

**Survey and Extraction of Metals in Indian Ocean Sea-Bed**

3388, SHRI K. MOHAN DAS : Will the PRIME MINISTER be pleased to state :

(a) whether any estimate has been made about the quantity of different metals in the Indian Ocean sea-bed;

(b) if so, the details thereof;

(c) whether there is any scheme for survey and extraction of these metal;

(d) whether India has the requisite technological expertise in this regard; and

(e) if not, whether the assistance of other countries has been sought and the result to exploration and extraction so far ?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND IN THE DEPARTMENTS OF OCEAN DEVELOPMENT, ATOMIC ENERGY, SPACE, AND ELECTRONICS (SHRI SHIVRAJ V. PATIL) : (a) and (b) No Sir. The sea-bed of the Indian Ocean is very extensive and hence it is difficult to have an accurate estimate of the quantity of different minerals or the metals contained therein. However, extensive survey is being carried on by the National Institute of Oceanography, Goa and other institutions in selected regions such as the continental shelf and the deep sea. The results of the survey have been highly encouraging.

(c) Yes Sir. From several ore-bearing deposits, metals are being extracted. For example, titanium, zirconium, vanadium, thorium, etc. are being extracted from the minerals ilmenite, monazite, rutile and zircon, which occur as placer deposits.

The most promising deposits in the deep sea are the polymetallic nodules. From the nodules, the three most important metals namely, copper, nickel, and

cobalt have been extracted at the laboratory scale. Efforts are underway to develop pilot scale operations.

(d) Yes Sir, India has the required technological expertise which is being enhanced further.

(e) So far no assistance from any foreign country has been sought in marine survey and extraction of metals.

**Report of the Committee on Introduction of Modern Office Machines and Equipments**

3389, SHRI K. RAMAMURTHY :

SHRI V. SOBHANADREESWARA RAO :

Will the PRIME MINISTER be pleased to state :

(a) whether the Committee set up to examine the feasibility of introducing modern office machines and equipments in Ministries/Departments has submitted its report;

(b) if so, the main recommendations made in the report ; and

(c) the action taken by Government thereon ?

THE MINISTER OF STATE IN THE MINISTRY OF PERSONNEL AND TRAINING, ADMINISTRATIVE REFORMS AND PUBLIC GRIEVANCES AND PENSION AND IN THE DEPARTMENT OF CULTURE (SHRI K.P. SINGH DEO) : (a) to (c) The Committee has not finalised its recommendations. At the instance of the Committee, studies are being made in selected Ministries/Departments to find out office equipment and machines in use and to examine the feasibility of further modernisation.

**Implementation of Recommendations of Management Studies**

3390, SHRI K. RAMAMURTHY : Will the PRIME MINISTER be pleased to state :