



RESEARCH ADVISORY COUNCIL (RAC) MEETING

The thirteenth RAC meeting was held on 17th October, 1987 under the chairmanship of Dr. V. S. Arunachalam, Advisor to the Government of India, Ministry of Defence. Dr. V. Ramaswamy, Dr. H. S. Ray attended the meeting as members. Prof. S. Banerjee, Director, briefly outlined the new organisational set-up in the laboratory, wherein number of divisions have been decreased to 14 from the erstwhile, rather unwieldy 35. Special groups, which cut across the divisional barriers, would be formed for each thrust area project. He indicated that by the middle of 1988 the laboratory proposed to pursue the following categories of projects :

- i) Thrust Area Projects (large, externally funded, of National importance) — 5
- ii) Sponsored projects —10
- iii) Exploratory Projects —25

Prof. Banerjee made a mention of the budget-cut in the current financial year amounting to about 40 per-



Dr. V. S. Arunachalam addressing the RAC meeting

cent of the plan budget, that could seriously affect the modernisation plan for infrastructural facilities. He also spoke about the Memorandum of Understanding (MOU) executed with R&D Centre for Iron and Steel, Steel Authority of India Ltd. and Tata Iron and Steel Company for pursuing interactive projects in nationally important areas.

The Chairman, Dr. Arunachalam drew the attention of the scientists of the laboratory towards the growing competition in the R&D sector. However, NML with its expertise and experience, is the right place for handling some of the major national projects such as the Tungsten project and the Ocean Nodules Project. He also mentioned that contrary views, notwithstanding the field of Metallurgical Engineering, is still a very exciting area for researchers to operate and indeed, is yet to attain its full potential particularly in the Indian context. In his view research could consider the following emerging areas for work.

1. Reducing energy consumption in aluminium production, development of Aluminium-Lithium alloys.
2. Continuous casting of rods, plates and sheets.
3. Newer processing routes (involving microstructural controlled processes) as alternatives to the closed die forging.
4. Quality control by improved NDE.
5. Development of metals and alloys based on indigenous raw materials (such as the Thackeron Steel that was developed at NML; it was indeed a development ahead of its time and could be pursued again).

The RAC considered and discussed the status of various i) In-house R&D Projects, ii) Sponsored

Projects, iii) Projects completed/to be completed by December, 1987, iv Exploratory Projects, v) Current interactive projects with SAIL and Tata Steel.

Prof. Banerjee, presented some of the interesting R&D results obtained in recent weeks. These include :

- Precipitation induced two way shape memory in Cu-Al-Zn base alloys,
- Software for the construction of predominance area diagram,
- Substitution of Cadmium in Silver base contact alloys,
- 100 hrs. campaign for the extraction of Co, Ni, Cu from polymetallic sea nodules,
- Electrolytic manganese dioxide—7 days pilot plant trials with MOIL/MECON,
- Production of low S low P iron from sponge iron fines in submerged arc furnace.

The members of the RAC visited various sections of the laboratory and discussed the status of the projects with the concerned scientists.

INAUGURATION OF COMPUTER APPLICATIONS DIVISION (CAD)

Dr. V. S. Arunachalam, Advisor, Govt. of India, Ministry of Defence and Chairman, Research Advisory Council (RAC) NML, inaugurated the CAD on 17th October, 1987. Dr. R. N. Ghosh of the Division explained the current functions and future plans of the CAD.



Dr. V. S. Arunachalam inaugurating the Computer Division at NML

Dr. Arunachalam, while emphasizing the importance of computers in scientific research, urged the staff of NML to make use of the facility in the development of softwares and stressed the role of CAD/CAM in design. Answering to the compliments by the HP 7585 Plotter, "Thank you Dr. V. S. Arunachalam for inaugurating me", the distinguished visitor wrote back "Do not just store! Use it fully, for the future is there somewhere! Good luck! — A Super Computer!"



Dr. R. N. Ghosh explaining the functions of Computer Division

Computer Application Division is presently active in computerizing various activities, such as :

1. Development of softwares in various fields of metallurgical engineering.

Some of the present R&D activities include the software development of predominance area diagrams construction in a personal computer and prediction of the life of boiler components through mathematical modelling.

2. Development of softwares for library and documentation and Pay rolls preparation for NML employees.

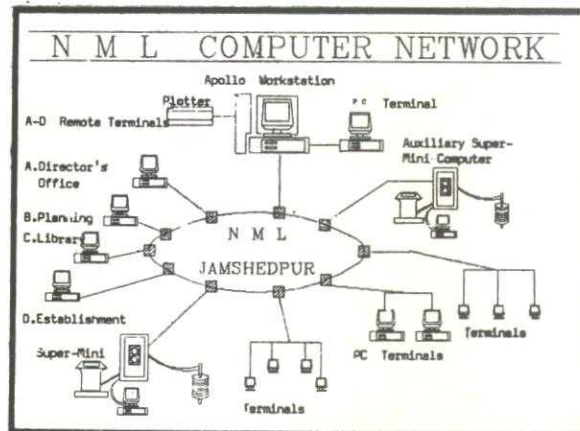


Diagram showing Computer Network

3. Some of the future activities include developing kinetic models for metal extraction and purification, mathematical methods for solidification, phase transformation and forming processes and expert systems for material selection, process design and optimization.



Dr. V. S. Arunachalam observing the Computer facility

large amounts of copper and manganese. Department of Ocean Development (DOD) is providing the financial assistance to a few organisations for carrying out R&D work on this mineral. NML has been recognised by the DOD as a major centre for this work and has so far received from them Rs. 76.30 lakhs for conducting research on the extraction of Co, Ni, Cu and Mn from the sea nodules.



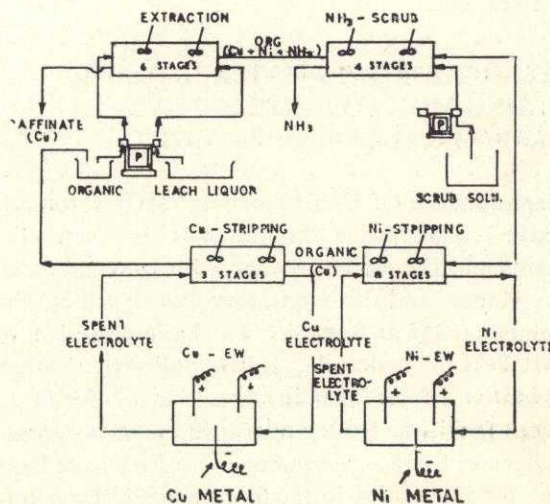
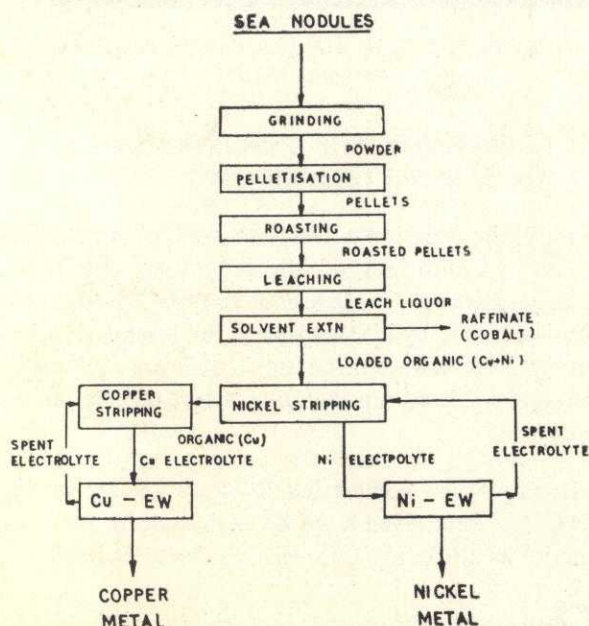
A view of the apparatus used in extracting Co, Ni, Cu from Sea Nodules

R & D ACTIVITIES

POLYMETALLIC SEA NODULES

The Government of India has given high priority to the project involving exploitation of minerals from sea beds. One of the important minerals discovered during the late twenties from the sea-beds, is the Polymetallic Sea Nodule, which is likely to become a potential source of scarce non-ferrous metals, especially cobalt and nickel. In addition, it contains

In the light of the earlier expertise at NML on ammonia leaching of lateritic nickel of Sukinda, and the bench scale studies, during the past 3 years, a suitable flow diagram was developed using NML's Roast-Leach-SX-EW process. The process of reduction roast, ammonia-leaching, solvent-extraction electrowinning for recovering electrolytic grade cobalt, nickel and copper was developed by a team consisting of Sarvashri D. D. Akerkar, D. Bagchi, M. G. Bodas, R. K. Jana, Z. H. Khan, V. Kumar, Y. Kumar, M. S. Mahanty, D. S. R. Murthy, A. K. Nayak, B. D. Panday, A. K. Saha, S. K. Tiwary,



Flow diagrams used, in Sea Nodules Extraction Metallurgy

S. N. Jha, P. Dasgupta, A. C. Basak and R. K. Kunwar. The sponsoring agency DOD have appointed M/s Engineers India Ltd. (EIL) for evaluating the work and observing the trials.

At the instance of the EIL a campaign of 100 hrs. was conducted during September 1, 1987 on the electrowinning of the metallic elements from the sea nodules.

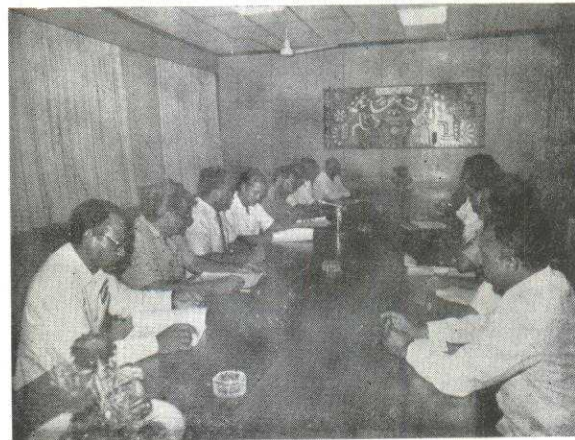
In the words of Shri Akerkar, the Project Leader, the process involved continuous roasting and leaching operations producing about 800 gms. each of Ni and Cu and 100 gms. of Co. The programme also includes the recycling of leach liquor to build up sufficient concentrations of the metallic values so that the solutions can be processed by solvent extraction and electrowinning for the recovery of Co, Ni, Cu.

Dr. A. K. Nayak, while commenting on the problems faced in conducting the process, said that the operation needs constant monitoring of trough pumps at specific rates to the mixer settler units; sample collecting from various out-going streams at regular intervals; operation of the copper and nickel electrowinning cells, regulating agitators to enable a desired mass transfer while effecting clean separation of organic and aqueous phases. The whole operation, according to him was a complex and enormous task, requiring a great team work and he expressed complete satisfaction over the performance.

Dr. B. D. Pandey said that the impurity build-up, particularly iron and manganese in the electrolytes due to the recycling required careful attention. He was happy that they succeeded in controlling the impurity build-up within permissible levels by bleeding of a part of the electrolyte and replenishing with pure electrolyte.

STEEL AUTHORITY OF INDIA LTD. AND NML SING MOU FOR INTERACTIVE COLLABORATIVE PROGRAMMES

A Memorandum Of Understanding (MOU) for interactive collaborative programmes between the Research and Development Centre for Iron and Steel, SAIL, Ranchi and this laboratory was signed on 21st September, 1987 at Ranchi. The basic objective of the MOU is to undertake R&D projects, through participative efforts including provision of funds to augment facilities, having relevance to the corporate objectives of SAIL. A number of projects have been chosen for interaction in the first stage : i) Development of superplastic ferrous alloys, ii) Ferritic steel



Experts of SAIL & NML discussing the MOU

for elevated temperature applications, iii) Production of low sulphur, low phosphorus liquid iron through VRDR-SAF route, iv) Production of DRI rods from iron ore fines using powdery carbonaceous materials without mixing, and v) Quality and reliability improvement of steel products.



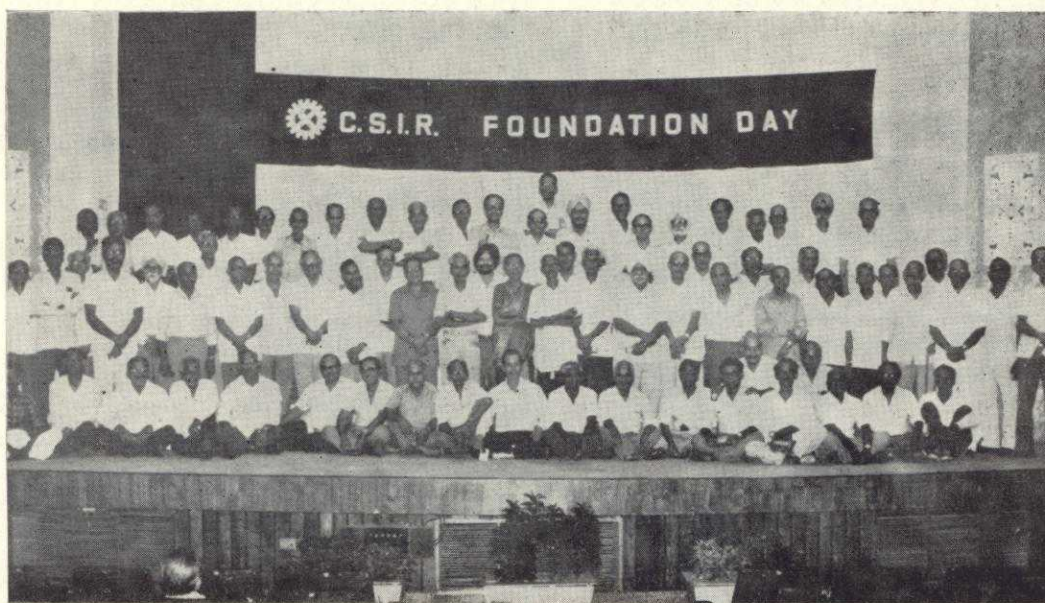
(L-R) Dr. S. K. Gupta & Prof. S. Banerjee exchanging the signed MOU.

NML CELEBRATES THE CSIR FOUNDATION DAY ON 26TH SEPTEMBER 1987.

To mark the occasion a function was organised in the New Auditorium of the laboratory. Prof. S. Banerjee, Director, made a brief mention of the contributions made by NML towards the progress of the country. He exhorted the staff members to work with zeal to keep up the good name of the laboratory.

NML employees completing 30 years of service in the CSIR, were given a wrist watch each by Prof. S. Banerjee as a token of appreciation for their service.

An essay competition for the children of NML employees was organised in Hindi and English on



Group Photograph of NML employees completing 30 years service at CSIR

the following two themes : i) Has science brought us to a point of no return? and ii) Science : the shape of things to come by 21st century. Children of NML employees upto 10th standard and from XI standard onwards, participated. Cash prizes of Rs. 500/- and Rs. 300/- were given to the winners and runners-up of each category. We are glad to announce the names of the winners of the competition.



Winners of essay competition (L-R Sr. Nos. 7, 8 and 2)



Winners of essay competition (L-R Sr. Nos. 3, 6, 1, 4 and 5)

- | | | | |
|----|--|------------|-----|
| 1. | Ms. Anuradha
D/o Dr. L. P. Pandey | Hindi (Jr) | 1st |
| 2. | Mr. Binor Mohan Kr. Singh
S/o Sh. R. R. Singh | Hindi (Jr) | 2nd |

- | | | | |
|----|--|--------------|-----|
| 3. | Mr. Baliram Sinha
S/o Sh. R. M. Sinha | Hindi (Sr) | 1st |
| 4. | Ms. Sunita
D/o Sh. O. Madhavan | Hindi (Sr) | 2nd |
| 5. | Mr. Biplab Ghosh
S/o Shri B. N. Ghosh | English (Jr) | 1st |
| 6. | Mr. Subhanjoy Mohanty
S/o Dr. O. N. Mohanty | English (Jr) | 2nd |
| 7. | Ms. Sona Bahadur
D/o Mrs. Aruna Bahadur | English (Sr) | 1st |
| 8. | Mr. Sanjay Kulkarni
S/o Shri M. R. Kulkarni | English (Jr) | 2nd |

Foundation day celebrations at MCRS Digha

Shri D. K. Khan, Scientist I/C Marine Corrosion Research Station, Digha, Dt. Midnapore, reports that MCRS observed an Open Day on 26th September, 1987. More than 200 visitors, including

students, teachers from different schools and colleges of Digha-PS, and general public visited the MCRS.

RE-ORGANISATION OF DIVISION

In order to streamline the research activities and administration of the laboratory, 14 divisions have been constituted. These replace the erstwhile 35 divisions. The details regarding the major current activities, future directions of work & growth, identification of facilities & spares are also being worked out for each division.

<i>Division</i>	<i>Head</i>
1. Administration	Shri S. K. Roy
2. Analytical Chemistry	Dr. L. P. Pandey
3. Computer Applications	Dr. R. N. Ghosh
4. Construction & Maintenance Services	Shri M. J. Shahani
5. Corrosion protection	Shri K. P. Mukherjee
6. Finance & Accounts	Shri V. M. Joshi
7. Ferrous Process	Shri K. N. Gupta
8. Information & Research Management	Dr. N. Dhananjayan
9. Instrumentation & Electronics	Shri L. N. Das
10. Material Processing	Dr. O. N. Mohanty
11. Material Evaluation	Dr. S. Banerjee
12. Mineral Processing	Shri N. Chakraborty
13. Non-Ferrous Process	Shri D. D. Akerkar
14. Process and Project Engineering	Shri Upkar Singh

Prof. S. Banerjee requested the scientists and other staff of the Laboratory, to give their full support and cooperation for improving the efficiency and quality of R & D work of the Laboratory.

TECHNICAL LECTURE

Dr. Charles R. Merigold, Director, Flenkel Corporation, USA delivered a lecture on, 'Solvent Extraction Reagents' on 9th October, 1987, This was organised jointly by NML and I. I. M., Jamshedpur Chapter.

APPOINTMENTS

We welcome Shri Satrughan Singh, Peon and wish him a fruitful stay at NML.

WE CONGRATULATE THEM ON THEIR PROMOTION....

Shri D. M. Rao as Assistant, Shri M. R. S. Giri as UDC; Sarvashri A Gopalakrishnan, K. R. K. Rao, M. Vijayan and G. P. Roy as Sr. Stenographer.

RETIREMENTS

Shri Motilal Mistry, retired on 30th September, 1987. We wish him a happy and peaceful retired life.

SOCIO-CULTURAL FRONT

A quiz competition was organised by NML Club both at Golmuri and Agrico campuses on 10th and 12th October, 1987 respectively in which Prof. S. Banerjee, Director and Shri K. N. Gupta, Dy. Director were the Chief Guests.

The quiz committee comprised of Dr. A. K. Vaish, Shri B. V. Rama Rao, Dr. M. G. Bodas and Shri A. M. Pande. Eleven teams consisting of 2 members each team, participated in the competition. The quiz competition covered questions on general science, general knowledge and sports. The following participants won the prizes :

Junior Group

Mr. K. V. Subramanian and Mr. Sanjoy Choudhury	—	1st
Mr. Bipilib Ghosh and Mr. Somen Chowdhury	—	2nd
Miss Parul Gupta and Mr. Rahul Gupta	—	3rd

Senior Group

Miss K. H. Gouri and Mr. Vidyat Basak	—	1st
Mr. Tanveer and Mr. T. A. Beck	—	2nd
Miss Meenakshi Sinha and Miss Madhumati Mathur	—	3rd

The competition attracted a large gathering and was full of enthusiasm and aroused keen interest in the participants.

Installation of Colour TV

Two colour TV sets were installed at the NML Club houses both at Agrico and Golmuri colonies on 9th October, 1987. The Executive Committee of the NML Club expressed their happiness to Director, NML for providing the two sets. At both the club houses, the residents of the area enjoy the TV programmes during the evenings.