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IIP

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No. 1

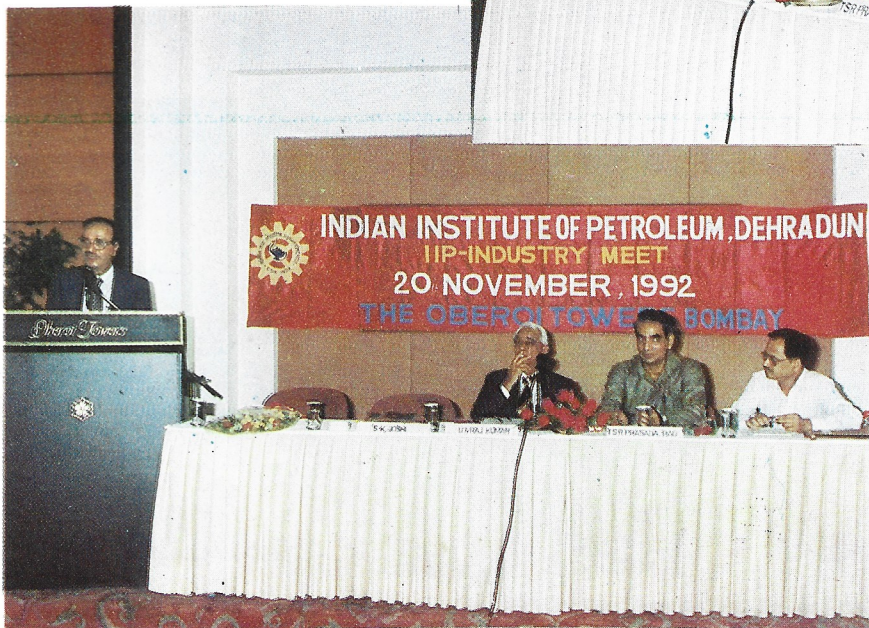
IIP - Industry Meet

November 20, 1992

Oberoi Towers, Bombay



↑ Mr L Kumar, Chairman, SAC, Ministry of P&NG, inaugurating the Meet. Seated (L to R) are Dr S K Joshi, DG, CSIR, Dr T S R Prasada Rao, Director, IIP and Mr T S Kusre, Manager, ICICI, Bombay.



↪ Dr S K Joshi delivering the presidential address.

The first-ever IIP-Industry Meet was organised on November 20, 1992 at Oberoi Towers, Bombay to expose IIP's capabilities and achievements to the user industry in and around Bombay as well as in Gujarat region. About 110 delegates attended the Meet representing about 70 industries and other organisations. The delegates included technocrats, industrialists, managing directors and business magnates from reputed business houses. **Mr Lovraj Kumar**, Chairman, Scientific Advisory Committee, Ministry of Petroleum & Natural Gas, inaugurated the Meet. **Dr S K Joshi**, DG, CSIR presided over the function.

Dr Joshi welcomed the delegates and said that with the change in scenario at Industrial Policy of Government of India, CSIR will not leave any stone unturned to help the Industry. He had all praise for IIP to have come forward to hold this kind of Meet to apprise the industry about the happenings in CSIR in general and IIP in particular. He emphasised that such Industry Meets should be held by all the laboratories of CSIR in future. **Dr T S R Prasada Rao**, Director, IIP, welcoming the Chief Guests and delegates, expressed his appreciation and happiness for their attending the Meet in such a good number. He said that petroleum industry relates to a significant sector of our economy and IIP will provide technological services to the industry in the best possible way. He thanked the delegates for coming over, sparing their valuable time to attend this Meet.

Mr Lovraj Kumar, in his inaugural address, praised IIP for its notable achievements in petroleum refining

area. He, however, pointed out that the future refineries will be very much different due to changed product specifications and will need different technologies. According to him, IIP has developed a good partnership with refining industry but he felt that the chemical industry in the country is yet to recognise that IIP can provide genuine help to them in their technological needs. He hoped that with this Meet IIP will be able to convince chemical industry also about its enormous capabilities to help them.

Scientists of IIP from different areas projected various technologies and processes developed at the Institute which are already in commercial operation and also those available for commercialisation. Various facilities installed at IIP were also outlined.

Delegates took part in the deliberations with great interest and enthusiasm. The Meet has led to greater interaction between IIP and industry. Many delegates were overwhelmed to know the potentiality of the Institute in the areas of petroleum refining, catalysis, specialty chemicals, petrochemicals, product application and biotechnology.

This Meet is expected to have far reaching effects on fetching extra budgetary resources for IIP from research projects which may be sponsored by these industries. In view of the encouraging outcome of the Meet, the Institute plans to hold such industry meets at other metropolitan cities also in near future.



A section of the distinguished guests.

TENTH RESEARCH COUNCIL MEETING

The tenth meeting of the Research Council (RC) of the Institute was held on December 4, 1992. It was attended by **Mr Lovraj Kumar**, Chairman. Scientific Advisory Committee, Ministry of Petroleum & Natural Gas and Chairman, RC, **Mr K N Venkatasubramanian**, Chairman, Indian Oil Corporation, **Mr T S Krishnamurthy**, Executive Director, Centre for High Technology, New Delhi, **Professor K Vasudeva**, Indian Institute of Technology, New Delhi, **Dr P Ratnasamy**, National Chemical Laboratory, Pune and **Professor D V Singh**, Director, Central Road Research Institute, New Delhi. **Dr P K Mukhopadhyaya**, Director, Indian Oil Corporation, R&D Centre attended the meeting as an invitee.

Dr T S R Prasada Rao, Director, IIP gave a brief account of the highlights and achievements of the Institute and some major events held during April-September 1992. The RC members felt that organisation of advance level courses should become a regular feature of IIP. An advisory committee, with members drawn from the hydrocarbon industry, should be constituted for this purpose.

Course content should be prepared in advance and debated. A calendar for two years needs to be prepared.

Continuing his presentation, **Dr Prasada Rao**, gave an overview of the achievements made on some of the ongoing projects. This was followed by review of the progress of the ongoing projects as well as detailed discussions in the area of modelling and simulation, separation processes, lubes and bitumens, catalytic conversion processes like FCC, hydrocracking and bimetallic reforming catalyst, thermal conversion processes like visbreaking and delayed coking, two-stroke engines, bulk intermediates etc. Some major points emerged which were recommended for appropriate action. Poster presentations on some of the ongoing projects were very much appreciated by the members. The members were also informed about the presentations/discussions held with various refineries and the projects initiated during the last six months as a result of these initiatives. The members desired that a report should be prepared on new perspectives and the areas that IIP should focus in the next five years for discussion in the next RC meeting.

The RC recorded its deep appreciation for the awards won by

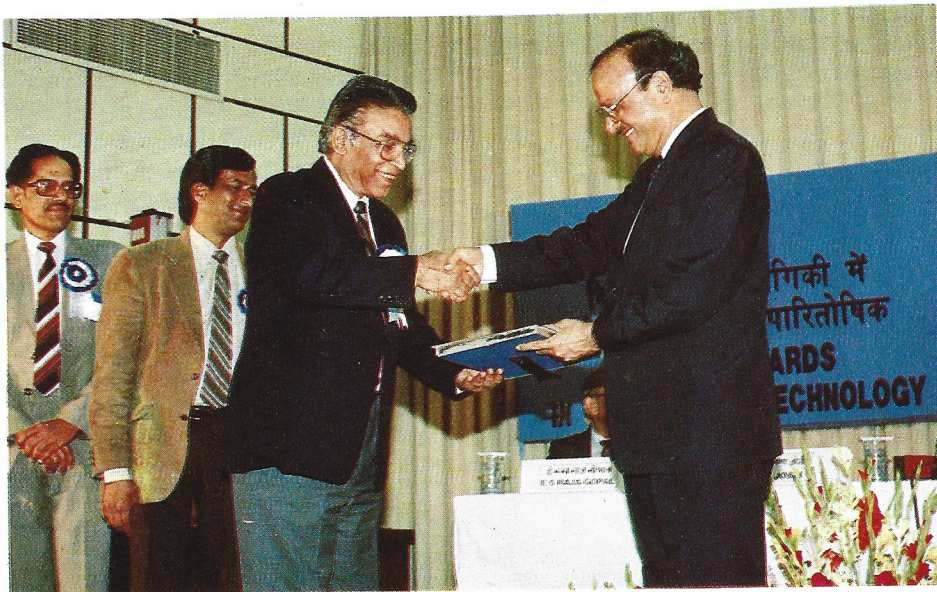
IIP. The members also lauded the excellent contribution made by **Dr P K Mukhopadhyaya** for his guidance to the research activities at IIP and hoped that he will continue to render his invaluable guidance in future also after his retirement as Director, IOC (R&D) in January 1993.

IIP BAGS CSIR TECHNOLOGY AWARD FOR THE SECOND TIME

The Indian Institute of Petroleum has been awarded the CSIR Best Technology Award for the year 1992. This award has been given to a group of scientists, namely, Messrs **R P Mehrotra**, **Mohan Lal**, **A V Ramaswamy**, **V K Kapoor** and **L D Sharma**, which has developed state-of-the-art Bi-metallic Platinum Rhenium Reforming Catalyst. With this catalyst development, India has joined a select band of four countries in the world who possess this sophisticated technology. This catalyst is used in transformation of low octane naphtha into high octane gasoline, which is the present day requirement to produce low lead gasoline for reduced pollution. This process also produces aromatic



Mr L Kumar conducting the RC meeting.



Dr S K Joshi, DG, CSIR, giving away CSIR Technology Award to Mr R P Mehrotra. Along with him (from L to R) are Dr A V Ramaswamy and Mr Mohan Lal.

concentrates rich in benzene, toluene and xylenes, which are basic building blocks for petrochemicals.

The technology for the catalyst manufacture was developed jointly by IIP and Indian Petrochemicals

Corporation Ltd. (IPCL) Research Centre and later transferred to CATAD unit of IPCL, Vadodara, who are manufacturing this catalyst in their plant at Thane. The catalyst is being successfully used at Madras Refineries Limited, Madras and IPCL,

AGREEMENT EXECUTED

Adarsh Chemicals & Fertilizers Ltd., Udhna, Surat.
Development of Catalyst for

Dehydrogenation on n-Butane/
Isobutene to Butylenes, December 22, 1992.



Dr T S R Prasada Rao, Director, IIP, presenting Agreement to Dr P D Patel, Chief Executive, Adarsh Chemicals & Fertilizers Ltd. On right is Dr P V Krishna.

Vadodara.

IIP has bagged this prestigious award for the second time; the first one was awarded in 1990 for its technology for separation of aromatics from reformed naphtha through solvent extraction.

The award was given away by Dr S K Joshi, DG, CSIR, and received by the concerned group of scientists on December 7, 1992 at a function in New Delhi. The award carries a cash prize of Rs.50,000/- and a plaque plus certificates to each member of the research group. It has been jointly awarded to IIP and Indian Institute of Chemical Technology (IICT), Hyderabad for development of technology in the chemical area. □

TECHNICAL SERVICES

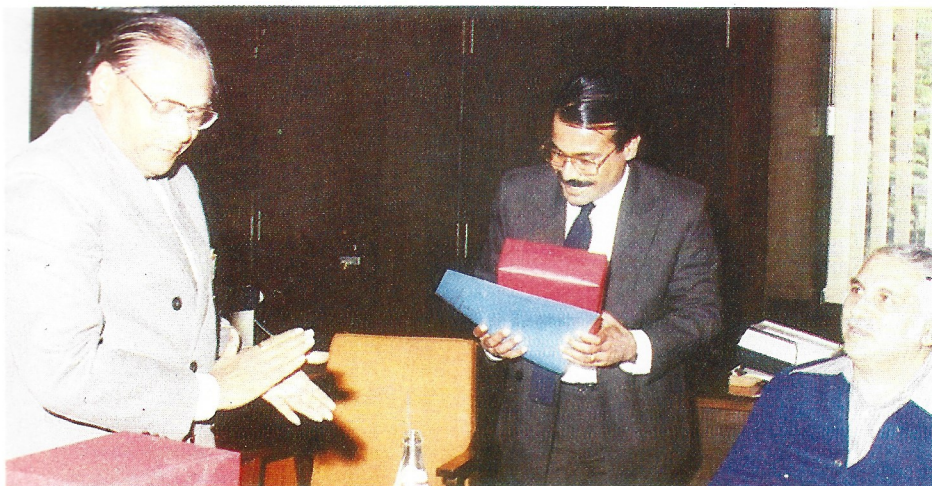
Regeneration of Catalyst at MRL

IIP - IPCL bimetallic reforming catalyst, IPR-2001, is being used by MRL for octane improvement and IPCL for Xylene production since June, 1990 and December, 1990, respectively. The performance of the catalyst in both of these reformers is satisfactory.

IIP scientists Messrs V K Kapoor, Y K Kuchhal, J R Rai and R K Agarwal visited MRL for regeneration of this catalyst during August to December, 1992. Now the catalyst is performing well. □

PROGRAMME ON ADVANCES IN PETROLEUM REFINING TECHNOLOGY AND RELATED ASPECTS

This four-day programme was organised from November 3 to 6, 1992 and was attended by 12 general managers/deputy general managers



Mr P M Mani, DGM (CRL) receiving programme certificate and memento from the Chief Guest Mr. Kuldeep Chandra, Director, IMD (ONGC), Dehradun. On right is Dr G P Phondke, Director, PID (CSIR), New Delhi.

representing Indian Oil Corporation Ltd., Bharat Petroleum Corporation Ltd., Hindustan Petroleum Corporation Ltd., Reliance Industries Ltd., Madras Refineries Ltd., and Cochin Refineries Ltd.

The faculty consisted of Dr A Convers, IFP France, Mr T S Krishnamurthy, Executive Director, Centre for High Technology, New Delhi, Mr H J Dave, Executive Director (Operations), Indian Oil Corporation Ltd. (R&P Division), New Delhi, Mr M B Lal, Advisor (Refineries), Ministry of Petroleum and Natural Gas, Govt. of India, New

Delhi, Professor D N Saraf, Indian Institute of Technology, Kanpur, Dr T S R Prasada Rao, Director, IIP and others.

It was very well received by the participants and they commended this first effort and suggested that this type of programme should be carried out by the Institute regularly every year.

The programme was organised by Dr Himmat Singh, Area Leader, Refining Technology and Training Divisions.

TRAINING PROGRAMMES ORGANISED

- Petroleum Refining Technology, October 12-23, 1992

Fourteen Chemical Engineers from BPCL, BRPL, CRL and IOC (AOD) refineries participated in this two-week programme, inaugurated by Dr T S R Prasada Rao, Director, IIP on October 12. Professor N K Joshi, IFS, Director, Forest Research Institute, Dehradun, delivered the valedictory address and gave away

the certificates to the participants on October 23. As per prevailing practice, the faculty was mostly drawn from the Institute.

- Application of Fuels and Lubricants in Automotive and Industrial Machines, November 16-17, 1992

Fifteen sales engineers from HPCL, Bombay, attended this two-week programme, inaugurated by Air Vice Marshall R Krishnan, Director, Defence Institute of Management and Work Study, Mussoorie, on November 16. Mr Ram Nath, Chief

Technical Services Manager (R&D), HPCL, was also present on this occasion. The faculty for this programme also consisted mostly of Institute's scientists/engineers.

Both these programmes were coordinated by Dr Himmat Singh, Area Leader, Refining Technology and Training Divisions.

- Stress Management - Managing Insult Situations, December 10, 1992

This one-day programme, organised by Dr Rakesh Chopra of Century Health Pvt. Ltd., New Delhi, on request, for the benefit of Institute's scientists, was very much appreciated.

Earlier, Dr S N Sharma of IIP had participated in a Workshop on Effective Boss-Subordinate Relations on November 25-26, 1992, at New Delhi organised by Dr Chopra. ■

DEPUTATIONS ABROAD

- Dr Lalji Dixit, Hungary, Bilateral Exchange Programme of Indian National Science Academy and Council of Scientific and Industrial Research, July 18 - October 18, 1992.
- Dr A N Goswami, USA, Raman Research Fellowship, August 12 - October 3, 1992.
- Dr L D Sharma, Germany, DAAD, September 1 - November 23, 1992.
- Dr T S R Prasada Rao, Director, IIP and Dr S N Sharma, Russia, Integrated Long Term Project (ILTP) of Cooperation in Science and Technology between India and Russia, September 30 to October 10, 1992.
- Dr D S Shukla, France, CNRS, October 6 to December 12, 1992.

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Tribology in Metal Working and Lubricated Wear

P C Nautiyal

ABOUT THE AUTHOR



P C Nautiyal
B Sc Engg, Ph D

Dr P C Nautiyal, Engineer E II, holds B Sc Mechanical Engineering degree from Banaras Hindu University and Ph D from Indian Institute of Technology, New Delhi. He joined the Institute in 1968. His main contributions have been development of radiotracer techniques for wear and oil consumption measurements, modelling of wear in boundary lubrication, lubrication mechanism of methanol-fueled engines, metal transfer in frictional contacts for surface treated materials and metal working tribology. He visited Canada, USA and Indonesia under UNDP and UNIDO programmes. During 1988-90, he was NSERC Visiting Fellow at the University of Waterloo, Canada. He has over 50 research publications and 3 patents to his credit. He heads the Tribology Group presently.

The word TRIBOLOGY was coined 26 years ago by a UK Government Committee. Surprisingly, the Committee was headed by an engineer who was a tribologist before the word was coined. This was Sir H Peter Jost who gave a paper at the meeting on the past, present and future of tribology. It is derived from the Greek word TRIBOS which means rubbing together of two surfaces.

Tribology, therefore means a study of the science related to surfaces in relative motion. When surfaces are in relative motion, FRICTION & WEAR are necessarily involved. The aim of Tribology is to minimize or eliminate friction and undesirable wear. Reduction of friction and wear has both engineering and economic implications. It was estimated by Sir Peter Jost in 1966 that British industry loses £500 million annually on this score. More recently, it was estimated that the losses in German industry are of the order of DM 25 billion. These figures can lead to an estimate of the losses in Indian industry where the efficiency of energy utilisation and material wear protection are not at such levels. But it could easily be of the order of several hundred crores of rupees.

Tribology is an area which has now been recognised the world over as a vital organ of the industry. In fact, it is a barometer for gauging the industrial excellence of a country. Tribological research, therefore, forms one of the major areas of the Petroleum Products Application Division of IIP related to automotive and industrial applications. It undertakes research work both in basic as well as in applied areas, thus catering to the various needs of the Indian industry viz. oil, steel and engineering.

The Tribology Area of IIP comprises of a strong team of highly qualified scientists and engineers: in that out of a total scientific staff of eight, six are doctorates (Engineering and Sciences), one post graduate and one graduate in Mechanical Engineering. The Tribology Laboratory is well equipped with various test facilities which meet a large number of national and international specifications in the area of industrial lubricants and greases apart from other advanced R&D equipments and surface analytical tools. Being a multidisciplinary area, this provides tremendous scope to interact with various other groups within and outside the Institute in order to serve the complex requirements of the

Indian Industry. The Group has been involved in providing consultancy to solve problems of the industries.

The major research areas are:

- a) Basic research in the areas:
 - i) Lubricant-material interaction in plastic deformation processes.
 - ii) Wear in lubricated contacts.
- b) Applied research relevant to industrial needs of the country.
- c) Product development.
- d) Development of performance test techniques for lubricant evaluation.
- e) Performance qualification of industrial lubricants and greases.

Achievements

The activity of Institute in the field of lubricant development is closely interconnected, the aim of which is to develop product choices suitable for Indian technology (e.g. cutting oils, rolling oils, gear oils, motor oils and lubricating greases). Significant results have been achieved in the development of functional products for metal working and other industries.

The Tribology Group has successfully developed a hot rolling

oil after extensive laboratory and field trials on steel plants. The product developed gives an energy saving in the order of 10% and a two-fold increase in roll life, besides improved product quality. This technology has since been transferred to an oil industry for commercialization.

Wear of mechanical components like bearings, piston rings and gears operating under different lubrication modes, is of vital industrial importance. Basic understanding of the wear mechanism will lead to better development of components and lubricants. Keeping this in view, analytical models have been developed to predict wear under partial elastohydrodynamic and boundary lubrication conditions.

The Tribology Group has successfully developed the following industrial lubricant formulations:

- i) Gear oil and cutting oil formulations based on joboba.
- ii) Quenching oils for hardening of steel cylinders.
- iii) Antiwear hydraulic oils.

In addition, several test techniques for evaluation of industrial lubricants were developed, e.g. Shock-load tendency of hypoid gear oils, Antiscuffing characteristics of two-stroke engine oils, Boundary lubrication characteristics of steel rolling oils.

Current Activities

- i) *Lubricant - Material Interaction in Plastic Deformation Processes.* The Group is involved in generation of a knowledge base on the basis of friction models in plastic deformation conditions which will help in optimising a lubricant-material pair specific to rolling. This approach will be explored in case of other metal working processes as well. This knowledge will be useful in developing cold rolling formulations for the oil industry.

- ii) *Development of Aqueous Lubricants*

Considering the future availability of mineral oils and the stringent pollution requirements, aqueous based lubricant technology is being developed. The present thrust is at developing synthetic aqueous based lubricants for cutting operation. The programme is likely to involve active industrial participation.

- iii) *Studies on Running-in Wear*

Intensive studies have been undertaken on various aspects of running-in. These include changes in surface topography, mechanisms involved, characterisation, influence of design and operating parameters as well as lubricant. The studies will lead to the development of technology for quicker and proper running-in. A tie-up with key automotive industry is envisaged.

- iv) *Wear in Lubricated Contacts*

The present approach is to develop analytical models that will help in improving fatigue wear life in rolling/sliding contacts. This will be useful in practical applications such as gears, rail/wheel interactions.

- v) *Studies on Mechanism of Action of Energy Efficient Oils*

At present, a laboratory method is being developed to screen the Friction Modifiers (FMS) for their performance in reducing friction. This study will help in selecting potential FMS for a detailed study of their mechanism of action through surface analytical tools.

Case for Future R&D Programmes/ Industry Interactions

Case I: A model for wear characteristics of piston ring has been developed based on boundary lubrication principles, an important field of tribology. The

effectiveness of boundary lubrication has been related to the forces which hold them on the solid surface based on absorption concepts. This analysis is an extension of the adhesive wear law and correlates surface energies with the wear mechanism. It is indeed clear that the kinetic and thermodynamic factors which govern surface reactions in catalysis must also be operative when equivalent experimental conditions are encountered in boundary lubrication. The concept that the basic surface chemistry is the same for the disciplines of Tribology and Catalysis, implies that the information gathered in catalysis vis-a-vis new surface treated materials, in vogue, for wear resistance is amenable to treatment as a boundary lubricated system. This offers tremendous possibilities for developing compatible lubricant-materials technologies over the coming years, in areas such as surface treatments and ceramics. Automotive builders and materials technologists may look upto this expert 'Tribology Group' for working out project proposals for meeting the challenges in this exciting new area of the 21st century.

Case II: Many industrial machine elements like bearings and gears operate under different roll/slide conditions and lubricant regimes. Wear of such components is of vital importance. A model has been developed for predicting the wear of such elements under lubricated conditions. The model envisages fatigue of asperity contacts and is being examined for application in rail wheel interactions. Any ideas or interactions at this stage on problem solving in this area is possible with this Group from rail and steel industries.

Case III: Investigation have been carried out on asperity level conformity in Elasto-Hydro-Dynamic lubrication (EHL). A sub-regime of EHL has been identified where surfaces tend to conform at asperity level. The characterisation of conformity has been done on the basis of cross-correlation functions and composite roughness profile. It was shown that improved lubrication exists with conformed surfaces. This knowledge offers exciting possibilities on making improvements in the tribological machine elements such as bearings and gears. This would be of use for the development of materials that result in improved performance.

Case IV: Despite the availability of several well documented test procedures for determining tribological characteristics, there is little correlation between different tests with service

behaviour. To improve technology transfer for the lubricants developed and to compare new wear resistant materials with traditional ones, well established test procedures and data bases are required. At present several test methods are being devised, significant among them being a laboratory test method to screen friction modifiers. This Group offers to develop inexpensive and simple tests for qualifying such materials on a collaborative basis.

Concluding Remarks

The coming years will see profound changes in the structure of the Institute with reorganisations, the order of the day. These changes are intimately related to the changing industrial scene, liberalisations, and the goals include joint venture possibilities with foreign investors as well as interaction with Indian companies which are with private and

government sections. The wave of the future is 'PROFIT'.

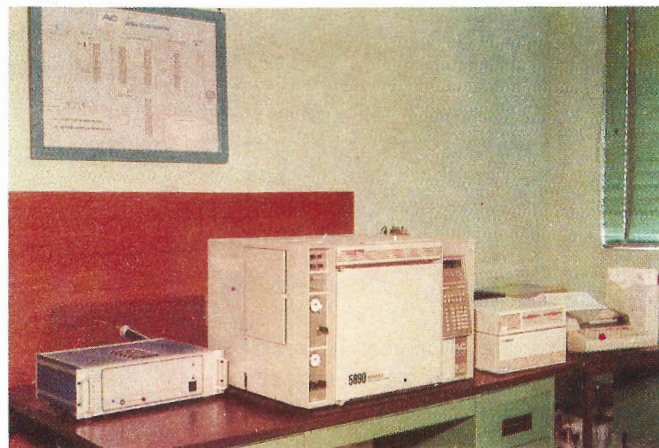
It is also important to get across a message that, like the standard ISO 9000 for improving quality management, a similar standard imposing tribological requirements should be applied in industry. This could be done by having to employ tribologists or use tribology consultants for the large and medium industries. There is a growing need for mutual interaction. That might not be too popular with industry right now, though perhaps it is the **only** realistic idea in very near future.

There is ample opportunity to interact with tribologists of IIP. One more indication of the determination of the Institute's Tribology Group to continue in its pursuit of excellence and interaction in TRIBOLOGY research is its hosting of the **X National Conference on Industrial Tribology** scheduled for March 24-26, 1993 at IIP, Dehradun. ■

NEW FACILITY ESTABLISHED

AC - HP PIONA - Analyser, recently established at IIP is a multicolumn approach for determination of group type hydrocarbon analyses of petroleum naphtha and gasoline blending stocks. The system is fully automatic and can characterise straight run/cracked samples (FBP ~ 200°C) in terms of normal-paraffins, iso-paraffins, olefins, naphthenes and aromatics (nP iP O N A) carbon numberwise. The type of information so generated is extremely important in petroleum industry in optimising process control and quality control parameters related to catalytic reforming, FCC, hydrocracking and other secondary processes for studying reaction kinetics. This is also useful in evaluating feedstock potential and in improving gasoline quality and in low lead phase down programmes etc.

The system is highly sophisticated, and can be analysed in four different modes, namely PNA, nP iP NA, PONA and PIONA. Continuous power supply and ultra pure,



PIONA Analyser

moisture-free gases (H₂ and He) are the prime requisite for its operation, while sample quantity and group-timings are very critical for quantitative results.

The system is based on UOP 870-90 specified instrument for PNA analysis of naphtha. ■

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● **Dr B P Pundir**, South Korea, Expert Group Meeting of UNDP, October 20-22, 1992.

● **Dr T S R Prasada Rao**, Director, IIP, 2nd International Workshop on Catalyst Design, Trieste, Italy, November 9-16, 1992. ■

COLLOQUIA

● **Professor R S Mann**, Ottawa University, Canada. "Catalytic Hydrodenitrogenation of Pyridine", December 1, 1992.

● **Professor S Kaliaguine**, University Laval Ste-Foy, Quebec, Canada. "Multitechnique Studies of Titanium Environment in Ti-Silicalites", December 2, 1992.

● **Professor Michel Guisnet**, University of Poitiers, France. "Hydrocracking of Alkanes - Influence of the Balance between Hydrogenation and Acid Sites", December 9, 1992. ■

LECTURES DELIVERED

Mr U C Agrawal, "Type of Crude/Feedstocks; Necessity; Wax Characteristics; Uses of Wax and Oil; Wax (including microcrystalline wax) - Present Production, Composition, Specifications and Future Outlook" and "Estimation of Lube Oil/Wax Potential in Laboratory", October 22-23, 1992, Engineers India Ltd., Training Centre, New Delhi.

Mr Agrawal also joined the panel for questions and answers session at the conclusion of the Lecture Series.

Mr N Ray, "Hydrofinishing of lube oil", October 23, 1992, ibid.

Mr J S Bahl, "Clay Treatment of Lube Oil/Waxes", October 23, 1992, ibid.

Mr Sudhir Singhal, "Energy Conservation and Conservation of Lubricating Oil", Training Programme on Environment Audit, Confederation of Indian Industries (Northern Region), Hotel Inderlok, Dehradun, November 13, 1992. ■

HONOURS, AWARDS AND RECOGNITION

● **Dr R Hradaynath**, CSIR Scientist Emeritus, IIP, has been honoured by the Executive Committee and the Governing Body of the Instruments Society of India for his outstanding contribution in the area of optical and electro-optical sciences, engineering and technology by an Award this year.

● **Mr S K Singhal**, Engineer, has completed Ph D in Mechanical and Industrial Engineering, University of Roorkee, Roorkee.

● **Mr Basant Kumar**, Scientist, elected as Member of the Executive Committee of the Indian Society for Mass Spectrometry, for three years 1992-94. He has also become Fellow of American Society for Mass Spectrometry (ASMS), USA.

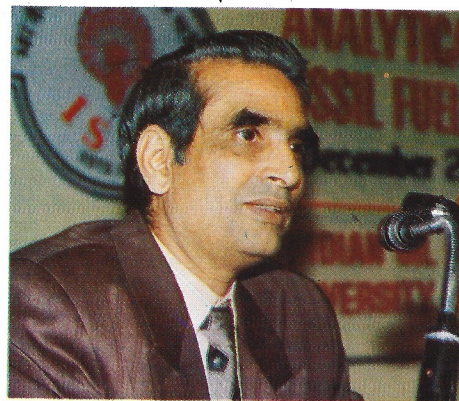
● **Mr A K Gondal**, Engineer, was awarded Best Presentation for Advancement of Technology for the paper entitled "A Software package for computation of wear profiles and its application in two-stroke engine cylinder lines" at XII NCICEC, September 1992.

Mr Gondal has completed M. Tech. (Industrial Tribology) from ITMMEC, IIT, New Delhi and was placed in the First Position.

● **Mr A K Aigal**, Engineer, has completed M.E. in Thermal Engineering from University of Roorkee in the First Division. ■

IIP'S PARTICIPATION IN NINETH NATIONAL SYMPOSIUM ON ANALYTICAL TECHNIQUES FOR FOSSIL FUELS AND LUBRICANTS

As many as twenty IIP scientists, first time ever in such a large number, participated in this Symposium, organised by Indian Oil Corporation Ltd. (IOC), R&D Centre, Faridabad and University of Delhi, under the auspices of Indian Society of Analytical Scientists (ISAS), Bhabha Atomic Research Centre, Bombay, from December 22 to 24, 1992 at SCOPE Complex, New Delhi. It was inaugurated on December 22 by **Dr Vasant R Gowarikar**, Scientific and Technical Advisor to Prime Minister and presided over by **Mr K N Venkatasubramanian**, Chairman, IOC. **Dr T S R Prasada Rao**, Director IIP, and member National Organising Committee of the Symposium delivered the key-note address entitled "Challenges for Analytical Scientists in Changing Scenario of Petroleum Industry" which was



Dr T S R Prasada Rao delivering the keynote address at the Symposium.

applauded by one and all. It highlighted the analytical trends in today's context of petroleum industry and also the difficulties faced by analysts. The valedictory address was given on December 24 by **Mr Lovraj**

Kumar, Chairman, Scientific Advisory Committee, Ministry of Petroleum and Natural Gas.

Fourteen research papers were presented by Institute's scientists and four scientists, namely, **Drs Himmat Singh, Pradeep Kumar, I D Singh and S D Bhagat** gave invited talks. Dr Himmat Singh chaired the opening Technical Session and Messrs **Basant Kumar and J M Nagpal** were rapporteurs for two sessions. Dr

Pradeep Kumar, Coordinator from IIP, also helped as Member of Technical Screening Committee for the preprint volume and presentations in the Symposium. Paper entitled "NMR Studies of Pitch and Coke Precursors in Petroleum Feed Stocks" by I D Singh, Himmat Singh, Manoj Srivastava and K S Aloopwan, presented by **Dr Manoj Srivastava**, was adjudged as the best paper, and was awarded a prize by Mr Lovraj Kumar. □

IIP'S PARTICIPATION IN EXHIBITIONS

- **Indian International Trade Fair - 92**, Pragati Maidan, Delhi, November 14-25, 1992.

IIP's exhibits depicting know-how and facilities developed, commercialised and available for transfer were displayed at the CSIR Stall and were well appreciated by the visitors. **Dr K M Sharan** coordinated the Institute's participation in this exhibition and he was assisted by **Dr R Moolchandra, Messrs R L Sharma, C D Sharma and U K Jaiswal**.

- **Scholar's Home**, Dehradun, November 13-15, 1992

Exhibits depicting IIP's set up, its capabilities and contribution to nation's petroleum industry were displayed for the benefit of this School's students and uniquely, the demonstrations/explanations were done by Institute's school students studying there. **Mrs Prasada Rao** from the School and **Mr S K Malhotra** from the Institute coordinated the IIP's participation in this exhibition. □

VI NATIONAL SYMPOSIUM ON MASS SPECTROMETRY

October 11 to 13, 1993

IIP has been chosen as the venue for this Symposium.

प्रशासनिक शब्दावली कार्यशाला

अक्टूबर 7-8, 1992

राजभाषा यूनिट द्वारा वैज्ञानिक तथा तकनीकी शब्दावली आयोग, नई दिल्ली के सहयोग से संस्थान के प्रशासनिक स्टाफ के हितार्थ एक प्रशासनिक शब्दावली कार्यशाला का आयोजन किया गया। इसमें प्रसिद्ध विद्वान प्रोफेसर नगेन्द्र व डॉ नारायण दत्त पालीवाल एवं आयोग के अध्यक्ष प्रोफेसर सुरज भान सिंह, श्री देवेन्द्र दत्त नौटियाल व श्री वीर सिंह आर्य व्याख्याता थे।

सरकारी कार्य-कलाप में अंग्रेजी माध्यम से हिन्दी माध्यम की ओर संक्रमण करने की दृष्टि से आयोजित इस दो-दिवसीय कार्यशाला में मानक शब्दावली, शब्दावली निर्माण, सरकारी पत्राचार, टिप्पणियों एवं अन्य संबंधित पहलुओं का विशद विवेचन किया गया।

इस कार्यशाला में प्रशासन के लगभग 70 कर्मचारी प्रतिभागियों के रूप में सम्मिलित हुए। □

भा पे सं दीवाली मेला

भा पे सं स्टाफ क्लब द्वारा अक्टूबर 22, 1992 को भा पे सं बाल उद्यान में प्रथम बार दीवाली मेले का आयोजन किया गया जिसका उद्घाटन श्रीमती प्रसाद राव द्वारा किया गया। इस मेले के मुख्य अतिथि श्री आर के अग्रवाल, मुख्य अभियन्ता, उत्तर प्रदेश राज्य बिजली बोर्ड थे। विधिवत् उद्घाटन के पश्चात् श्रीमती राव एवं श्री अग्रवाल ने मेले में लगाये गये विभिन्न स्टालों का निरीक्षण किया। मेले में भेलपुरी, दही-बड़ा, पापड़ी, ढोकला, छोले-भटूरे, काफी, पकोड़े, डोसा तथा विभिन्न खेलों व पंडालों ने समस्त जनसमूह को बाँधे रखा। इसके अतिरिक्त दीप रंगोली आयोजित की गयी। इस प्रतियोगिता में प्रथम पुरस्कार कु. तनु एवं द्वितीय पुरस्कार कु. भाग्यलक्ष्मी को मिला। मेले में बेबी शो व फैन्सी ड्रेस का भी आयोजन किया गया। बेबी शो में प्रथम पुरस्कार बेबी हिना एवं मास्टर वरुण दीप तथा द्वितीय पुरस्कार मास्टर वरुण एवं कु. भूमिका के पक्ष में गया। खान-पान के स्टालों में प्रथम पुरस्कार भेलपुरी तथा खेलों के स्टालों में लकी 12 के पक्ष में गया। इस मेले



श्रीमती प्रसाद राव मेले का उद्घाटन करते हुए। बायें हैं मुख्य अतिथि श्री आर के अग्रवाल।

का मुख्य आकर्षण चमचमाती रोशनी, झूले, चर्खी तथा आतिशबाजी रहे। इस मेले को सभी कर्मचारियों, उनके परिवारों तथा निकटवर्ती ग्रामों के निवासियों ने सराहा। दीवाली मेले को सफल बनाने में सभी कर्मचारियों का सहयोग रहा तथा सर्व श्री गुरुप्रसाद, के एस रावत, रामनाथ शर्मा, जी सी कोठारी, सी एन भार्गव का सहयोग प्रशंसनीय रहा।

भा पे सं स्टाफ क्लब के उपाध्यक्ष श्री के ए कुरेशी द्वारा पुरस्कार वितरित किए गए। अन्त में श्री बी एस रावत, सचिव, भा पे सं स्टाफ क्लब द्वारा धन्यवाद प्रस्ताव पारित कर मेले का समापन किया गया।



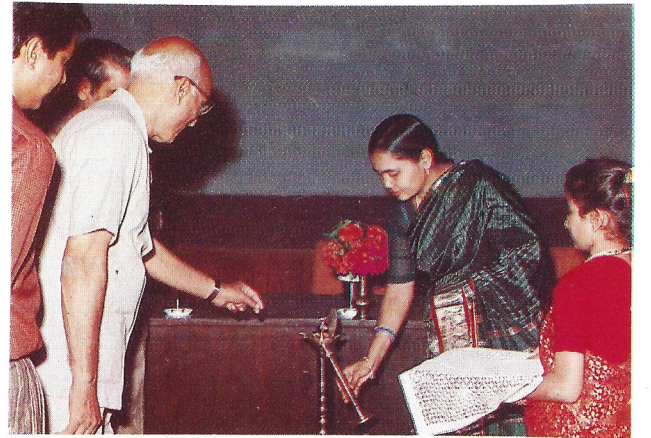
भा पे सं में डी डी बी ए पारिवारिक सम्मेलन

देहरादून जिले के ब्रिज खिलाड़ियों एवं उनके परिवारों का दूसरा वार्षिक सम्मेलन 'देहरादून डिस्ट्रिक्ट ब्रिज एसोसिएशन' के द्वारा "भा पे सं स्टाफ क्लब" के सक्रिय सहयोग से अक्टूबर 18, 1992 को आयोजित किया गया। इस समारोह के मुख्य अतिथि डॉ टी एस आर प्रसाद राव, निदेशक, भा पे सं, थे। इस सम्मेलन का उद्घाटन निदेशक महोदय की धर्मपत्नी श्रीमती प्रसाद राव ने पारंपरिक दीप जलाकर किया। सदस्यों के बच्चों एवं परिजनों ने नृत्य, गीत व गज़लों भरा एक रंगारंग सांस्कृतिक कार्यक्रम प्रस्तुत किया। श्रीमती प्रसाद राव ने बीते वर्ष में खिलाड़ियों द्वारा विभिन्न ब्रिज प्रतिस्पर्धाओं में जीते पुरस्कारों का वितरण किया।

मुख्य अतिथि का परिचय करते हुए श्री एल पी गोयल, अध्यक्ष, डी डी बी ए, ने डॉ प्रसाद राव की, विज्ञान और प्रौद्योगिकी के क्षेत्र में उनके जाने-माने योगदान के साथ ही खेलों एवं अन्य सांस्कृतिक गतिविधियों के संवर्द्धन में गहरी दिलचस्पी हेतु उनकी श्लाघा की। डॉ प्रसाद राव ने अपने भाषण में यह स्पष्ट

किया कि देहरादून जिले में विज्ञान से संबंधित छत्तीस (36) विभाग हैं, और एक स्वस्थ कार्य-वातावरण बनाए रखने के लिए इस प्रकार के सम्मेलन बहुत महत्वपूर्ण हैं। उन्होंने इस एसोसिएशन के इस प्रकार के भविष्य के प्रयासों हेतु अपने सम्पूर्ण सहयोग और सहायता का आश्वासन दिया। उन्होंने जोर दिया कि ब्रिज बुद्धिजीवियों का खेल है और बहुत वैज्ञानिक है। इसे पूरा प्रोत्साहन मिलना चाहिए।

डॉ प्रसाद राव स्वयं भी एक अच्छे ब्रिज खिलाड़ी रहे हैं, लेकिन उन्होंने बताया कि अपने अत्यंत व्यस्त कार्यक्रम के कारण उन्हें अपना यह शौक बंद करना पड़ा।



श्रीमती प्रसाद राव द्वारा डी डी बी ए पारिवारिक सम्मेलन का उद्घाटन। बायें हैं श्री एल पी गोयल।

इस समारोह के बाद सदस्यों के लिए एक युगल खेल हुआ और उनके परिजनों के लिए वन-भोज का आयोजन था।



शरद नैशनल ब्रिज टूर्नामेंट, मद्रास

यह टूर्नामेंट "ब्रिज फेडरेशन ऑफ इंडिया" द्वारा हर वर्ष आयोजित किया जाता है जिसमें देश-भर से लगभग 200 टीमों का भाग लेती हैं। इस वर्ष यह मद्रास में दिसम्बर 17 से 27, 1992 तक सम्पन्न हुआ। इसमें देहरादून से सर्वश्री प्रेम विजय डोगरा, नरेन्द्र नारायण कुलश्रेष्ठ (दोनों भा पे सं से), बी रॉय (आयुध निर्माणी) एवम् आर बी चौहान (उत्तर प्रदेश सिंचाई विभाग) ने भाग लिया। इस टीम ने 17 "स्क्स लीग राउन्ड" में से 10 में विजय प्राप्त कर सराहनीय प्रदर्शन किया।

नव वर्ष पूर्व संध्या कार्यक्रम

नव वर्ष की पूर्व संध्या पर भा पे सं स्टाफ क्लब द्वारा सामुदायिक केन्द्र में एक रंगारंग कार्यक्रम का आयोजन किया गया। इस कार्यक्रम में संस्थान के बच्चों ने कई लोकप्रिय कार्यक्रम प्रस्तुत किए, जिनका संचालन श्री नितिन शर्मा ने किया। मुख्य आकर्षण के रूप में मेरठ के श्री राकेश कपूर एवं पार्टी ने मनो-विनोद के कार्यक्रम व नाटक आदि प्रस्तुत कर दर्शक दीर्घा पर अपनी छाप सदैव के लिए छोड़ दी। इस कार्यक्रम में 'म्यूजिकल चेयर्स' का भी आयोजन किया गया तथा विजयी व्यक्तियों को डॉ टी एस आर प्रसाद राव द्वारा पारितोषिक दिए गए। सांस्कृतिक कार्यक्रम के साथ-साथ 'तम्बोला', 'कैम्प फायर' एवं 'फायर वर्क्स' का भी आमंत्रितों ने आनन्द लिया।

श्री बिलोघन सिंह रावत, सचिव, भा पे सं स्टाफ क्लब ने दर्शकों का आभार प्रदर्शित करते हुए आयोजन की समाप्ति की। इस आयोजन की

सफलता में सर्व श्री रामनाथ शर्मा, गुरुप्रसाद, ध्यान सिंह आदि का सहयोग प्रशंसनीय रहा।

कार्मिक समाचार

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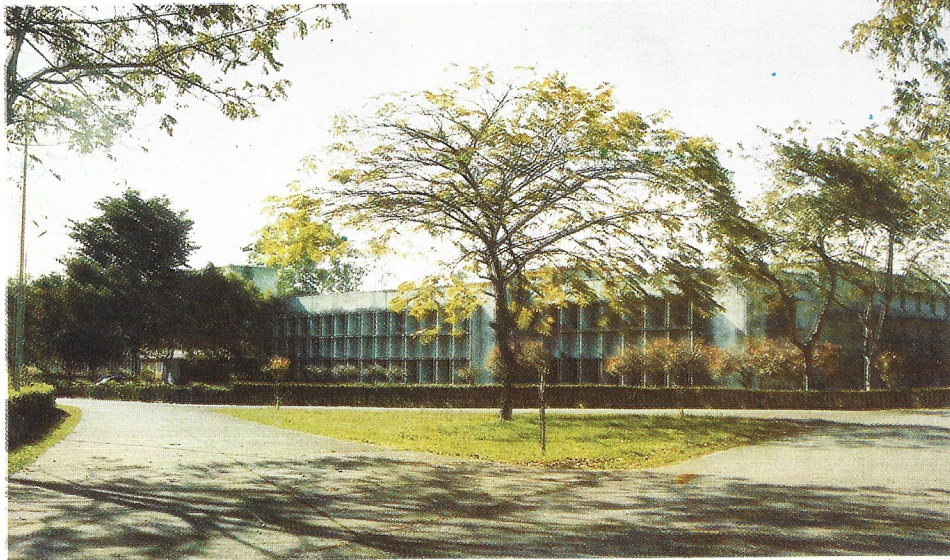
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सम्पादकीय सहयोग (हिन्दी) : राजभाषा यूनिट

छायाचित्र: श्री गुणा नन्द मधवाल
अन्य अधिकतर चित्र: श्री चन्द्र मोहन खन्ना