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Vol. I No.1

Industrial Research and Development News

UNIDO
United Nations
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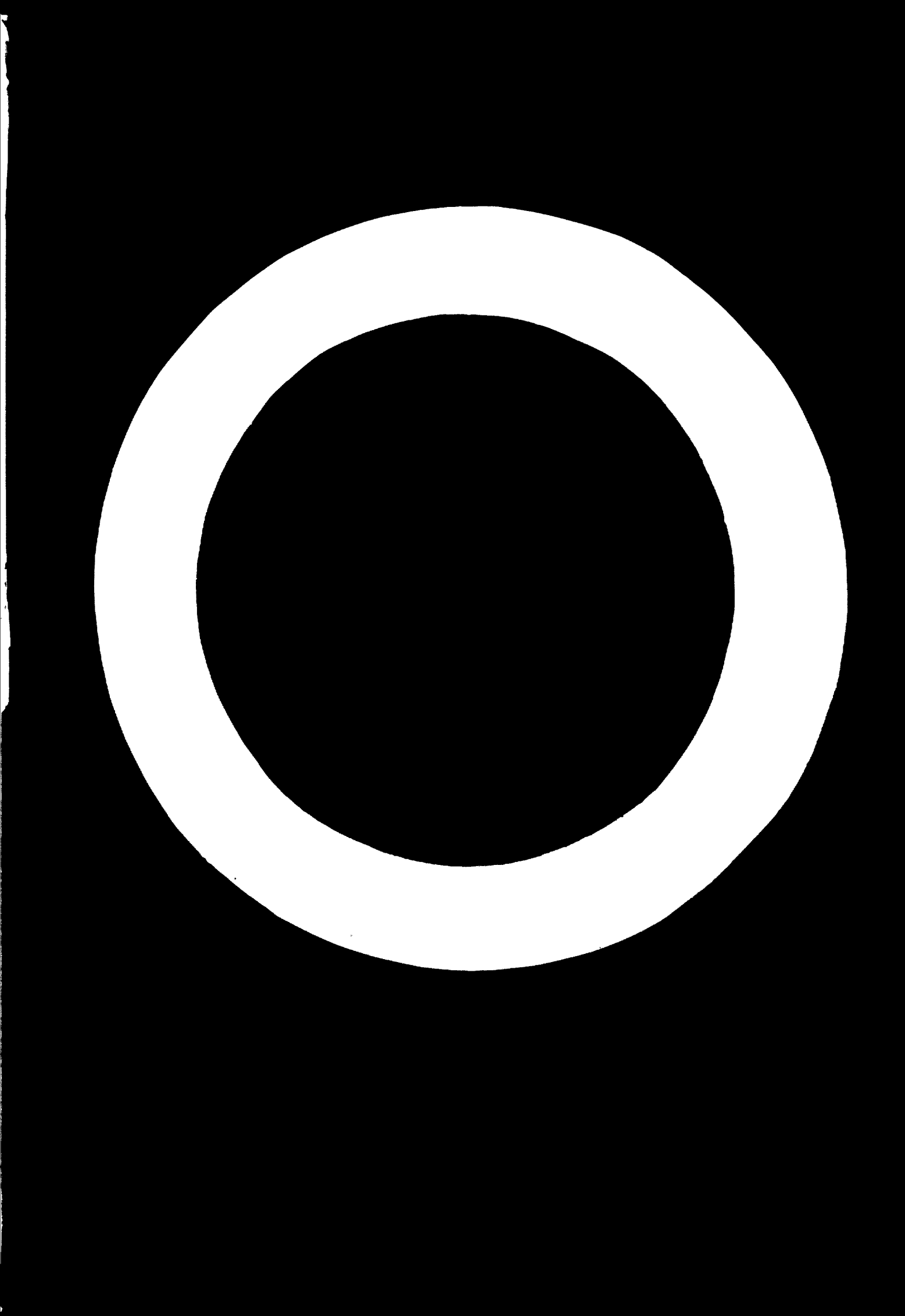

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Industrial Research and Development News

United Nations Industrial Development Organization (UNIDO)

JANUARY 1967 VOL. II NO. 1

UNITED NATIONS NEW YORK

Calendar of Meetings

January to June 1967

United Nations Advisory Committee on Science and Technology
Asian Regional Group Meeting, Bangkok, February

International Paper Exposition
Galeries Lafayette, Paris, France, 7-24 February. Paper products from ten countries

Technical Association of the Pulp and Paper Industry
Annual Meeting and Technical Conference, New York Hilton Hotel, 19-23 February. Dr. Philip E. Nelhercut, Secretary, 360 Lexington Avenue, New York, N. Y. 10017

International Conference on High Energy Physics and Nuclear Structure
Rehovoth, Israel, 27 February–3 March. Margalit Sela, Weizmann Institute of Science, Rehovoth, Israel

American Management Association
Data Processing Conference, New York Hilton Hotel, 6-8 March. Mr. Lewis Abrams, Head of Administrative Services Division, 135 West 50th Street, New York, N.Y. Fee to non-members, $100; for members, $85

7th Arab Petroleum Congress
Baghdad, 6-13 March. League of Arab States, Midan Al Tahrir, Cairo, United Arab Republic

2nd International Conference on Fibre-Glass-Reinforced Plastics and Casting Resin
(International Tagung uber Glasfaserverstarkte Kunststoffe und Giessharze) Berlin, 13-15 March. Institut fur Kunststoffe, Deutsche Akademie der Wissenschaften zu sche Akademie der Wissenschaften zu Berlin, Rudower Chaussee 116/125, 1199 Berlin-Aldershof, Germany

Conference on Air Traffic Control Systems Engineering Design
London, 13-17 March. Joint Conference Secretariat, Institution of Electrical Engineers, Savoy Plaza, London, W.C.2, England

Conference on Pre-Stressed Concrete Pressure Vessels
London, 13-17 March. Secretary, Institution of Civil Engineers, Great George St., London, S.W.1, England

Symposium on Artificial Recharge and Management of Aquifers
Haifa, Israel, 19-26 March. Prof. L. J. Tison, Secretary General, International Association of Scientific Hydrology, 61, rue des Ronces, Gentbrugge, Belgium

Solar Energy Society
Annual Meeting, Tempe, Arizona, 20-22 March. F. E. Edlin, c/o Arizona State University, Tempe, Arizona

Symposium on Testing and Design Methods of Light-Weight Aggregate Concretes
Budapest, Hungary, 20-24 March. Organizing Committee, RILEM Symposium on Light-Weight Concretes, Dioszegi ut 37, Budapest 11, Hungary

International Symposium on Fuel Elements
(Internationale Symposium uber Brennstoffelemente) Dresden, 29 March–1 April. Chemische Gesellschaft in der D.D.R., Clara-Zetkin-Str.105, 108 Berlin 8, Germany

Meeting of the Industrial Development Board (UNIDO)
United Nations, New York, 10-28 April.

International Symposium on Germ-Free Life Research
Nagoya, Japan, 6-9 April. Dr. M. Miyakawa, c/o Department of Pathology, Nagoya University School of Medicine, Nagoya, Japan

Symposium on Crystallization through Chemical Transport Reactions
(Symposium uber Kristallisation durch Chemische Transportreaktionen) Berlin, 12-15 April. Dr. K.Th. Wilke, Sekretar, Unterkommission Kristallzuchtung II. Physikalisch-Technisches Institut, Deutsche Akademie der Wissenschaft zu Berlin, Rudower Chaussee, Gebaude L6, 199 Berlin-Aldershof, Germany

Semiconductor Device Research Conference
Bad Nauheim, Fed. Rep. of Germany, 19-22 April. Dr. H. Burghoff, Stresemann-Alle 21, 6 Frankfurt am Main, Fed. Rep. of Germany

London International Engineering and Marine Exhibition and International Welding Exhibition
Sponsored by the London Chamber of Commerce, Earls Court and Olympia, London, England, 25 April–4 May.

Benelux Textile Sessions
Ghent, 27-29 April. Savaanstr.38, Ghent, Belgium

4th International Pulp Bleaching Conference
Toronto, Canada, 1-4 May. Technical Session, Canadian Pulp and Paper Association, 2280 Sun Life Bldg., Montreal, P.Q., Canada

Lubrication and Wear Conference
Edinburgh, 5-7 May. Conference Department, Institution of Mechanical Engineers, 1 Birdcage Walk, London, S.W.1., England

5th International Congress of Engineers
Athens, 7-14 May. Organizing Committee, P.O. Box 673, Athens, Greece

International Federation of Consulting Engineers
Annual General Assembly, Washington, D.C., 8-11 May. c/o Donald A. Buzzell, Executive Director, Consulting Engineers Council of the United States, 1155 15th Street, NW, Washington, D.C.

Symposium on Nuclear Activation Techniques in the Life Sciences
Amsterdam, 8-13 May. Dr. G. B. Cook, Department of Research and Isotopes, International Atomic Energy Agency, 11 Karntner Ring, Vienna 1, Austria

International Rubber Technology Conference
Brighton, England, 15-18 May. Institution of the Rubber Industry, 4 Kensington Palace Gardens, London, W.8, England

International Hide and Allied Trades Improvement Society
Congress, Florence, Italy, May 1967. G. Buduin, 13, rue de Hollande, Brussels 6, Belgium

20th International Conference on Water Studies
Liège, 22-27 May. CEBEDEAU, 2, rue A. Stevart, Liège, Belgium

International Meeting on Plasticity
(Convegno Internazionale sulla Plasticità), Palermo, Italy. Istituto di Scienza delle Costruzioni, University of Palermo, Via Maqueda, Palermo, Italy

International Organization for Standardization
General Assembly, Moscow, 14-28 June. For further information apply to the standards organization of your country.

4th International Symposium on Ceramics
Alfred, New York, 3rd week in June. Dr. Thomas J. Gray, College of Ceramics, Alfred University, Alfred, New York 14802

Exhibition-Congress Sponsored by Dechema, The German Association for Chemical Plant Manufacturing
21 to 29 June, Dechema, Postfach 7746, 6 Frankfurt am Main, West Germany. See page 16 of this issue.

Workshop on Management of Industrial Research Institutes
Athens(?). June/July 1967, organized by UNIDO

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Summaries of Articles

Editorial

United Nations Industrial Development Organization (UNIDO)

Announcement of the establishment of UNIDO; the newly appointed Executive Director Abdel-Rahman; functions, activities and financial support for the new Organization.

Know-how and its Transfer – Do We Know How?

by J. C. Ramaer

The successful transfer of know-how, produced by research and continually adapted and improved, is essential for industrial development. The conditions for this success require properly prepared manuals and technically trained staff for "on-the-job" training; continuity; successful adaptation of techniques to local conditions; integrated provision of know-how; and ability to deal with other areas indirectly affected. The article also deals with agreements and the role of international organizations in the transfer of know-how.

DECHEMA

Deutsche Gesellschaft für chemisches Apparatewesen

(German Association for Chemical Equipment Construction)

by D. Behrens, Director

A German scientific association concerned with chemical technology and the exchange of information in this field. DECHEMA sponsors the Achema Exhibition-Congress triennially and the three-volume Achema Year-Book. Further, it documents scientific literature, especially on corrosion, and contributes to research efforts in this area through Digest Data Sheets. In addition, DECHEMA conducts education courses in technical chemistry, instrumentation and corrosion.

Financing Industrial Development in the United Kingdom

The National Research Development Corporation (NRDC), London

by K. Grossfield

The NRDC, established in 1948, is an independent public corporation, financed by

Editorial

Organisation des Nations Unies pour le développement industriel (UNIDO)

Annonce de la création de l'UNIDO; le Directeur exécutif nouvellement nommé, Dr Abdel-Rahman; fonctions, activités et soutien financier de la nouvelle organisation.

Le "know-how" et son transfert – Savons-nous comment?

par J. C. Ramaer

Le transfert efficace du "know-how", issu de la recherche, continuellement amélioré et adapté aux conditions locales, est une condition du développement industriel. Le succès de ce transfert requiert des manuels adéquats et un corps d'employés à formation technique spéciale pour la formation "sur place" des ouvriers; un apport continu; l'adaptation des techniques aux conditions locales; et la possibilité de s'occuper d'autres secteurs indirectement affectés. L'article comprend des accords et le rôle des organisations internationales dans le transfert du "know-how".

DECHEMA

L'Association allemande pour la construction d'appareillage chimique

par D. Behrens, directeur

Association scientifique allemande s'occupant de technologie chimique et intéressée dans l'échange d'informations dans ce domaine. DECHEMA patronne le Congrès-Exposition trisannuel de l'Achema ainsi que la publication annuelle en trois volumes de cette dernière. De plus, elle documente la littérature scientifique, spécialement sur la corrosion, et contribue aux efforts de la recherche dans ce domaine à travers les "Digest Data Sheets". Enfin, la DECHEMA dirige des cours d'éducation en matière de chimie technique, d'instrumentation et de corrosion.

Le financement du développement industriel en Grande-Bretagne

La Société nationale pour le développement de la recherche (NRDC), Londres

par K. Grossfield

La NRDC, établie en 1948, est une société publique indépendante, financée par des

Editorial

La Organización de las Naciones Unidas para el Desarrollo Industrial (ONUDI)

Anuncio de la creación de la ONUDI; el recién nombrado Director Ejecutivo, Abdel-Rahman; funciones, actividades y fuentes financieras de la nueva organización.

La Tecnología y su Transmisión – ¿Sabemos llevarla a cabo?

por J. C. Ramaer

El éxito de la transmisión de la tecnología, producida por investigación y continuamente adaptada y perfeccionada, es esencial para el desarrollo industrial. Las condiciones para este éxito requieren un personal bien preparado manualmente y tecnológicamente para entrenamiento en el terreno; continuidad; la acertada provisión de tecnología y la habilidad de tratar con otras áreas que sean afectadas indirectamente. El artículo incluye acuerdos y el papel de organizaciones internacionales en la transmisión de tecnología.

DECHEMA

La Asociación Alemana para la Fabricación de Plantas Químicas

por D. Behrens, Director

Una asociación científica alemana que trata sobre la tecnología química y el cambio de información en este campo. DECHEMA patrocina trienalmente el Congreso de Exhibición de Achema, así como el anuario de tres tomos de Achema. Además, compila literatura científica, especialmente sobre corrosión, y contribuye a los esfuerzos de investigación en esta región, a través de hojas con los datos pertinentes. Además, DECHEMA también lleva a cabo cursos en química técnica, instrumentación y corrosión.

El financiamiento del desarrollo industrial en el Reino Unido

Corporación Nacional de Investigación del Desarrollo (NRDC), Londres

por K. Grossfield

La NRDC, establecida en 1948, es una corporación pública independiente, adminis-

Government loans under the jurisdiction of the Minister of Technology. Its functions are (*a*) to license inventions and (*b*) to finance the development of inventions to the stage of commercial use, as well as lend financial support to joint projects with industry. The article also includes sources of inventions; placement of inventions with industry; licence negotiations; current development projects; and publications.

prêts gouvernementaux, sous la juridiction du Ministre de la technologie. Ses fonctions: *a*) breveter les inventions; *b*) financer le développement des inventions jusqu'au stade de l'utilisation commerciale, et fournir des prêts pour le support financier des projets entrepris en commun avec l'industrie. L'article comprend également des informations concernant: les sources d'inventions; le placement des inventions dans l'industrie; les négociations de brevets; les projets de développement récents; et les publications.

trada con préstamos del Gobierno, bajo la jurisdicción del Ministro de Tecnología. Sus funciones son: *a*) dar patente a los inventos, y *b*) financiar el desarrollo de inventos hasta llegar a la etapa de utilización comercial, así como de prestar apoyo financiero a proyectos vinculados a la industria. El artículo también incluye: fuentes de inventos; la colocación de inventos en la industria; negociaciones de patentes; proyectos actuales de desarrollo; publicaciones.

Industrialization of the Coconut

by Canuto G. Manuel

The National Institute of Science and Technology (NIST) in Manila, the Philippines, has carried out research studies aimed at using several coconut-tree by-products which were formerly wasted. Use of the dried and fallen leaves of the tree as material for manufacture of paper is one example. Work done to date on the pulp quality and potential of leaves includes determination of their cellulose content.

Another project is research in the making of vinegar from coconut water. The sugar-enriched coconut water requires 4 to 7 days for alcoholic fermentation. The subsequent acetic fermentation requires at least one month to achieve maximum acidity. Vinegar production as a home industry seems quite possible.

Industrialisation de la noix de coco

par Canuto G. Manuel

L'Institut national de science et de technologie (NIST) à Manille, Philippines, a entrepris des recherches en vue d'utiliser plusieurs sous-produits des cocotiers considérés jusqu'alors comme déchets. L'utilisation de feuilles tombées des arbres comme matière première pour la fabrication de papier en est un exemple. Les travaux accomplis jusqu'à présent sur les caractéristiques de la pâte et le potentiel des feuilles comprend, entre autres, la détermination de leur pourcentage en cellulose.

Un autre projet traite de la recherche concernant la production de vinaigre à partir d'eau de noix de coco. La fermentation alcoolique de l'eau de noix de coco, préalablement enrichie en sucre, nécessite 4 à 7 jours. La fermentation acétique qui s'ensuit nécessite au moins un mois pour atteindre un maximum d'acidité. La production de vinaigre à l'échelle artisanale apparaît facilement réalisable.

Industrialización del coco

por Canuto G. Manuel

El Instituto Nacional de Ciencia y Tecnología (NIST), de Manila, Filipinas, ha emprendido investigaciones con el objeto de utilizar varios subproductos del coco que hasta ahora habían sido considerados como desperdicios. La utilización de las hojas caídas de los árboles como materia prima para la fabricación de papel es un ejemplo. Los trabajos realizados hasta ahora sobre las características de la pulpa y sobre el potencial de la hoja comprende, entre otros, la determinación de sus contenidos de celulosa.

Otro proyecto es la investigación de la producción de vinagre utilizando el agua de coco. La fermentación alcohólica del agua de coco, previamente enriquecida en azucar, toma de 4 a 7 días. La fermentación acética que se produce tarda por lo menos un mes para obtener un máximo de acidez. La producción de vinagre en escala artesanal parece fácilmente obtenible.

Research and Development Network (RDN) in the Czechoslovak Socialist Republic

In the Czechoslovak Socialist Republic, the Research and Development Network is a centrally directed system serving all industry. At present it includes 1 850 different establishments, of which about 20 per cent have state budgetary support. The others operate as integral parts of industrial organizations. The RDN co-operates closely with the State Commission for Development and Co-ordination of Science and Technology. Research and Development funds are allocated according to needs of specific industries and the stage of technological development.

Un réseau de recherche et de développement dans la République socialiste de Tchécoslovaquie

Dans la République socialiste de Tchécoslovaquie, le réseau de recherche et de développement constitue un système centralisé servant toute l'industrie. Il comprend à présent 1 850 établissements différents, dont 20 pour cent environ sont subventionnés par l'Etat. Les autres fonctionnent comme parties intégrantes des organisations industrielles. Ce réseau coopère étroitement avec la Commission de l'Etat pour le développement et la coordination de la science et de la technologie. Les fonds de recherche et de développement sont accordés suivant les besoins d'industries déterminées et le niveau de développement technologique.

Sistema de Investigación y Desarrollo en la República Socialista de Checoslovaquia

En la República Socialista de Checoslovaquia el Sistema de Investigación y Desarrollo (RDN) es una organización dirigida centralmente y que sirve a todas las industrias. Actualmente éste incluye 1850 firmas diversas, de las cuales cerca del 20 por ciento reciben ayuda del presupuesto del Estado. Las restantes operan como partes integrantes de organizaciones industriales. El RDN trabaja estrechamente ligado a la Comisión Estatal para el Desarrollo y Coordinación de la Ciencia y la Tecnología. Los fondos para el desarrollo y la investigación son asignados de acuerdo con las necesidades de cada industria y su estado de desarrollo tecnológico.

Research Projects

1. Paper and pulp production from agricultural wastes (Guatemala)
2. Incaparina: Protein-rich flour (Guatemala)
3. Study on the effects of radiation in the preservation of bananas (Nicaragua)
4. Research studies in ceramics (New Zealand)
5. Built-in fabric lubrication (India)
6. Stretch wool fabrics (Australia)

Projets de recherche

1. Production de papier et de pâte à papier à partir de déchets végétaux (Guatemala)
2. Incaparina: farine riche en protéines (Guatemala)
3. Etude des effets des radiations dans la préservation de bananes (Nicaragua)
4. Etudes et recherches sur les céramiques (Nouvelle-Zélande)
5. Tissus autolubrifiants (Inde)
6. Tissus extensibles (*stretch*) en laine (Australie)

Proyectos de investigación

1. Producción de papel y pulpa con desechos agrícolas (Guatemala)
2. Incaparina—harina muy rica en proteínas
3. Plan nicaragüense para el estudio de los efectos de las radiaciones en la conservación de plátanos
4. Estudios e investigaciones de la cerámica (Nueva Zelandia)
5. Lubricación inherente—Tejidos (India)
6. Tejidos elásticos de lana (Australia)

Special Resources for Special Needs

(Background and guide to Sweden's iron and steel industry)

This phrase sums up the Swedish philosophy of industrial development. Recognizing the limitations imposed by its relatively small size, Sweden has won its place in the industrial world by developing highly specialized products for special uses.

In the steel industry, about half of the Swedish steel mills make solely or principally special steels, such as stainless or tool steels. The small and medium-sized steel mills are often better adapted to supplying the specialized products required by the various engineering industries. The success of the high-grade steel industry is to a great extent attributable to company research, appropriate combinations of furnace types and careful selection of raw materials.

Jamaica Industrial Development Corporation (JIDC)

by R. A. Carey

Rapid industrialization of Jamaica can be attributed to the efforts of the Jamaica Industrial Development Corporation. Since 1950, 147 factories began operation, attracted by a series of incentive laws, including the Industrial Incentive Law, the Export Industry Encouragement Law and the Hotels Aid Law. JIDC further offers services to industry in industrial engineering, cost accounting, trade promotion and management training services.

Men in Research

We continue the series of biographical sketches of outstanding personalities in the world of scientific and applied research.

This issue includes the following:

- Sir William Black, Chairman
  National Research Development Corporation, London, United Kingdom
- Josef Dittert, General Manager
  Mechanical Engineering Technology and Economic Research Institute, Prague, Czechoslovakia
- Manuel Noriega Morales, Director
  Instituto Centroamericano de Investigacion y Tecnologia Industrial (ICAITI), Guatemala City, Guatemala
- Mohamed Shafqat Husain Siddiqi, Chairman
  Pakistan Council of Scientific and Industrial Research, Karachi, Pakistan
- B. C. Sekhar, Director
  Rubber Research Institute of Malaya, Kuala Lumpur, Malaysia

Ressources spéciales pour besoins spéciaux

(Origines et guide de l'industrie du fer et de l'acier en Suède)

Cette expression résume la philosophie suédoise du développement industriel. Reconnaissant les limites qui lui sont imposées par sa dimension plutôt réduite, la Suède s'est taillé une place dans le monde industriel en développant des produits hautement spécialisés pour usages spéciaux.

Dans la sidérurgie, environ la moitié des aciéries suédoises ne fabriquent exclusivement ou principalement que des aciers spéciaux tels l'acier inoxydable ou l'acier à outils. Les petites et moyennes aciéries sont souvent mieux adaptées pour satisfaire les demandes des différentes industries de génie et de constructions mécaniques. Le succès de l'industrie sidérurgique des aciers de haute qualité est dû, en grande partie, à la recherche au sein des compagnies, à la combinaison judicieuse des types de fours et au soin dans la sélection des matières premières.

Société pour le développement industriel de la Jamaïque (JIDC)

par R. A. Carey

L'industrialisation rapide de la Jamaïque peut être attribuée aux efforts de la Société pour le développement industriel de la Jamaïque.

Depuis 1950, 147 usines ont commencé à opérer, attirées par une série de lois destinées à encourager et à favoriser l'industrie, à savoir: la Loi pour la stimulation industrielle, la Loi d'encouragement pour les industries d'exportation et la Loi de l'Aide à l'industrie hôtelière. JIDC offre en outre différents services à l'industrie dans les domaines suivants: engineering industriel, comptabilité industrielle, promotion du commerce, services de formation pour la gérance.

Personnalités dans le domaine de la recherche

Nous poursuivons la série des aperçus biographiques des personnalités marquantes du monde de la recherche scientifique et appliquée.

Cet article comprend les biographies suivantes:

- Sir William Black, président de la Corporation nationale pour le développement de la recherche, Londres, Royaume-Uni.
- Josef Dittert, administrateur général, Institut de technologie de génie mécanique et de recherche économique, Prague, Tchécoslovaquie.
- Manuel Noriega Morales, directeur, Institut centramericain de recherche et de technologie industrielle, Guatemala, Guatemala.
- Mohamed Shafqat Husain Siddiqi, président du Conseil pakistanais de la recherche scientifique et industrielle, Karachi, Pakistan.
- B. C. Sekhar, directeur, Institut de Malaisie pour la recherche sur le caoutchouc, Kuala Lumpur, Malaisie.

Recursos Especiales para Necesidades Especiales

(Antecedentes y guía sobre la industria del hierro y del acero en Suecia)

Esta frase resume la filosofía sueca sobre el desarrollo industrial. Suecia, reconociendo las limitaciones que le impone su relativa pequeñez territorial, ha ganado su posición actual en el mundo industrial por medio de la producción de productos muy especializados para usos especiales.

En la industria siderúrgica, alrededor de la mitad de las plantas suecas de fabricación de acero producen principalmente, o únicamente, aceros especiales tales como acero inoxidable o acero para herramientas y útiles industriales. Las plantas siderúrgicas medianas y pequeñas están por lo general en mejor posición para suministrar los productos especializados requeridos por las varias industrias metal-mecánicas. El éxito de los aceros de alta calidad se debe en gran parte a las investigaciones de las compañías, a la combinación adecuada de hornos y a la selección cuidadosa de materias primas.

Corporación de desarrollo industrial de Jamaica (JIDC)

por R. A. Carey

La rápida industrialización de Jamaica se puede atribuir a los esfuerzos de la Corporación de Desarrollo Industrial de Jamaica. Desde 1950, 147 fábricas han comenzado a operar, atraídas por una serie de leyes de promoción, incluyendo la Ley de Promoción Industrial, la Ley de Fomento de la Industria de Exportación y la Ley de Ayuda a los Hoteles. La JIDC ofrece, además, servicios a las industrias de ingeniería industrial, contabilidad, promoción de comercio y servicios de enseñanza administrativa.

Hombres dedicados a la investigación

Seguimos nuestra serie de apuntes biográficos de personalidades destacadas en el mundo de investigación científica.

Este número incluye a los siguientes:

- Sir William Black, Presidente de la Corporación Nacional del Desarrollo de la Investigación, Londres, Reino Unido
- Josef Dittert, Gerente.
  Instituto de Tecnología de Ingeniería Mecánica e Investigación Económica, Praga, Checoslovaquia
- Manuel Noriega Morales, Director
  Instituto Centroamericano de Investigación y Tecnología Industrial (ICAITI), Ciudad de Guatemala, Guatemala
- Mohamed Shafqat Husain Siddiqi, Presidente
  Consejo Pakistano de Investigación Científica e Industrial, Karachi
- B. C. Sekhar, Director
  Instituto de Investigación de Goma de Malasia, Kuala Lumpur, Malasia

A Pioneer Among Industrial Research Institutes

by J. G. Black, Director

International Development Programme

The range of national and international research goals, structure and educational efforts of Battelle Memorial Institute in Columbus, Ohio, United States; including coverage of laboratories in the Pacific Northwest, Switzerland and Germany.

Un pionnier parmi les instituts de recherche industrielle

par J. G. Black, directeur

Programme de développement international

L'éventail des buts nationaux et internationaux dans la recherche, la structure et les efforts éducationnels du "Battelle Memorial Institute" de Columbus (Ohio) E.-U.; y compris les laboratoires dans le nord-ouest Pacifique, en Suisse et en Allemagne.

Un iniciador entre los institutos de investigación industrial

por J. G. Black, Director

Programa de Desarrollo Internacional

La gama de la meta de investigación nacional e internacional, estructura y esfuerzos educacionales del Instituto Conmemorativo de Battelle, en Columbus, Ohio, EE.UU., incluyendo estudios de laboratorios en el Noroeste del Pacífico, Suiza y Alemania.

Singapore Industrial Research Unit

by A. Rajaratnam

Singapore, with a population of about 1.82 million and a small area of 220 square miles, has more than 2 500 industrial enterprises. The majority are relatively small, with little spare capital and limited resources. It was partly for this reason that the Industrial Research unit (IRU) Singapore was established in 1963. The Unit assists local industries in the development of new processes and products and makes studies of local raw materials. It is divided into four main sections: chemical engineering, electrical electronics engineering, instrument repair and calibration, and mechanical engineering.

Recherche industrielle à Singapour

par A. Rajaratnam

Avec une population d'environ 1 820 000 habitants et une superficie de 220 milles carrés, Singapour compte plus de 2 500 entreprises industrielles, dont la majorité est de petite envergure, avec un capital réduit et des ressources limitées. Ces raisons ont partiellement motivé l'établissement en 1963 de l'Unité de recherche industrielle (IRU) à Singapour. L'Unité assiste les industries locales dans le développement de procédés et de produits nouveaux et entreprend l'étude de matières premières locales. Elle comprend quatre sections principales: génie chimique, génie électrique électronique, réparation et calibration d'instruments et génie mécanique.

Investigaciones industriales en Singapur

por A. Rajaratnam

Singapur, con una población de 1,82 millones de habitantes y una superficie de 220 millas cuadradas, tiene más de 2.500 industrias. La mayor parte de ellas son empresas pequeñas, con reservas escasas y recursos limitados. Es por esta razón que la Unidad de Investigaciones Industriales (IRU) fue creada en Singapur en 1963. La Unidad asiste a las industrias nacionales en el desarrollo de procesos y productos nuevos y efectúa estudios sobre materias primas locales. Está dividida en cuatro secciones principales: ingeniería química, ingeniería eléctrica y electrónica, reparación y calibración de instrumentos e ingeniería mecánica.

DIRECTORY

Institutes of Industrial Research and Technology in Israel

REPERTOIRE

Instituts de recherche industrielle et technologique en Israël

DIRECTORIO

Institutos de Investigación y Tecnología Industrial en Israel

British Columbia Research Council—Canada

by P. C. Trussell, Director

The story of the establishment in 1944 and development of the British Columbia Research Council, its organization, financing, technical information service and research management, including BCRC's "in-house" programmes and research accomplishments to date.

Conseil pour la recherche de Colombie britannique au Canada

par P. C. Trussell, directeur

L'histoire de l'établissement en 1944 et du développement du Conseil pour la recherche de Colombie britannique, son organisation, son financement, son service d'information technique et ses recherches sur la gérance, y compris les programmes internes de recherche du BCRC et ses réalisations dans la recherche jusqu'à ce jour.

Consejo de Investigación de la Columbia Británica—Canadá

por P. C. Trussell, Director

La historia del establecimiento en 1944 y del desarrollo del Consejo de Investigación de la Columbia Británica, su organización, financiación, servicio de información técnica y dirección de investigación, incluyendo sus programas internos y sus realizaciones hasta la fecha.

El Instituto de Investigaciones Tecnológicas (IIT)

(The Institute for Technological Research)
Bogotá, Colombia

by Norton Young L., Director

This Institute's general responsibilities include applied chemistry and new product development; agricultural chemistry, specifically organic and inorganic fertilizers; analysis and quality control; engineering and economic studies; and technical assistance to national industry. The article contains brief information on financial status, staff, laboratories and library.

L'Institut de recherches technologiques (IIT)

Bogotá, Colombie

par Norton Young L., directeur

Les responsabilités générales de l'Institut s'étendent aux domaines suivants: la chimie appliquée et le développement de nouveaux produits; la chimie agricole, particulièrement les engrais organiques et inorganiques; l'analyse et le contrôle de la qualité; les études économiques et d'engineering; l'assistance technique à l'industrie nationale. L'article contient de brèves informations sur le statut financier, les employés, les laboratoires et la bibliothèque.

El Instituto de Investigaciones Tecnológicas (IIT)

Bogotá, Colombia

por Norton Young L., Director

Las principales responsabilidades de este Instituto incluyen la química aplicada y el desarrollo de nuevos productos; química agrícola, específicamente abonos orgánicos e inorgánicos; análisis y control de calidad; estudios de ingeniería y de economía; asistencia técnica a la industria nacional. El artículo contiene información concisa sobre el estado financiero, el personal, laboratorios y biblioteca.

United Arab Republic–A Management Consulting Centre (MCC)

by I. Y. Saved

Development of a successful consulting programme for the United Arab Republic calls for marked changes in management viewpoints. MCC, by establishing consulting as a process of collaboration, helps management to become aware of the need for change. In addition to its full-time staff members, MCC hopes to establish a roster of fully qualified consultants and to put mixed consultant-client teams to work for industrial development.

National Bureau of Standards (NBS)

International Symposium on Technology and World Trade

On the occasion of the dedication of the new NBS facilities at Gaithersburg, Maryland, the United States Secretary of Commerce, John T. Connor, welcomed delegates from twenty-five countries to a symposium on technology and world trade. Participants discussed co-operative means of increasing the transfer of technology to the less developed countries and the role of standardization in world trade.

Interview with Dr. G. Gordon, Director of the National Bureau of Standards, on the national and international role of NBS in setting standards; how standards relate to commerce.

USA Standards Institute Is Announced

The new USA Standards Institute (formerly the American Standards Association) is now so organized that consumers' representatives, producers' representatives and Institute members all share in establishing standards. It is believed that this trilateral approach will develop a more satisfactory set of standards for American products.

Creation of a European Association for Better Administration of Industrial Research

In May 1966 the European Industrial Research Management Association (EIRMA) was established in Paris. Its over-all objective is to increase the effectiveness and achievements of industrial research in Europe by improving research management, as well as by providing a better understanding of the role and value of research in industry. One of EIRMA's primary areas of concern is the method of selecting appropriate research projects.

République arabe unie – Un centre de consultation en matière de gestion des entreprises (MCC)

par I. Y. Saved

Le développement d'un programme de consultation efficace pour la R.A.U. nécessite un changement radical des points de vue de l'administration. En établissant le "consulting" comme un processus de collaboration, le MCC aide l'administration à devenir consciente de la nécessité de changer. Le MCC espère établir, additionnellement à son personnel à plein temps, une liste de consultants professionnellement qualifiés et mettre à pied d'oeuvre des équipes mixtes de consultants-clients qui se consacreraient au développement industriel.

Le Bureau national de normalisation (NBS)

Colloque international sur la technologie et le commerce mondial

A l'occasion de l'inauguration des nouveaux laboratoires du NBS à Gaithersburg (Maryland), le Secrétaire au commerce des Etats-Unis, John T. Connor, a accueilli les délégués de 25 pays à un colloque sur la technologie et le commerce mondial. Les participants ont discuté des moyens de coopération nécessaires pour l'accroissement du transfert de la technologie aux pays sous-développés et du rôle de la normalisation dans le commerce mondial.

Une entrevue avec le Dr C. Gordon, directeur du Bureau national de normalisation, sur le rôle national et international du NBS dans l'établissement des normes et sur l'apparentement de ces normes au commerce.

Institut de normalisation aux Etats-Unis – Nouvelles fonctions

Le nouvel Institut de normalisation des U.S.A. (autrefois l'Association américaine de normalisation) est organisé de telle façon que des représentants de consommateurs, des représentants de fabricants et des membres de l'Institut participent à l'établissement des normes. Il est à espérer que cette façon trilatérale d'approcher le problème permettra de développer une série de normes plus appropriées pour les produits américains.

Création d'une association européenne pour une meilleure administration de la recherche industrielle

En mai 1966, l'Association européenne de gestion de la recherche industrielle (EIRMA) a été établie à Paris. Son objectif général est d'accroître l'efficacité et les réalisations de la recherche industrielle en Europe en améliorant l'administration de la recherche et en établissant une meilleure compréhension du rôle et de la valeur de la recherche dans l'industrie. Une des activités primordiales de l'EIRMA comprend la méthode pour la sélection de projets de recherche adéquats.

R.A.U. – Un Centro para Consultas en Materia de Administración de Empresas (MCC)

por I. Y. Saved

Para el desarrollo de un programa eficaz de consultas en la R.A.U. se necesita un cambio radical en los puntos de vista de la administración. Al establecer las consultas como un método de colaboración, MCC ayuda a la administración a darse cuenta de la necesidad de un cambio. MCC espera establecer, además de los empleados permanentes con que cuenta, una lista de consultores profesionales competentes y de formar equipos mixtos de consultores y clientes que se dedicarían al desarrollo industrial.

Oficina Nacional de Normas (NBS)

Simposio Internacional de Tecnología y Comercio Internacional

Con ocasión de la dedicación de las nuevas facilidades de la NBS en Gaithersburg, Maryland, el Secretario de Comercio de los Estados Unidos, John T. Connor, dio la bienvenida a delegados de 25 países a un simposio sobre tecnología y comercio mundial. Los participantes discutieron medios cooperativos de transferir la tecnología a los países en vía de desarrollo y la importancia de la normalización en el comercio mundial.

Entrevista con el Dr. G. Gordon, Jefe de la Oficina Nacional de Normas, sobre la importancia nacional e internacional de la NBS en el establecimiento de normas; la relación de normas con el comercio.

Normalización – Un método nuevo en los Estados Unidos

El Instituto de Normalización de los EE.UU. (antes Asociación Americana de Normalización) está organizado de tal manera que los representantes de los consumidores, los representantes de las compañías y los miembros del Instituto, todos colaboran en establecer normas. Se cree que este enfoque trilateral producirá una serie de normas más satisfactorias para los productos americanos.

Nuevo Proyecto Europeo de Administración de las Investigaciones Industriales

En mayo de 1966 la Asociación Europea de Administración de Investigaciones Industriales (EIRMA) fue creada en Paris. Su objetivo principal es el de incrementar la efectividad y realizaciones de las investigaciones industriales en Europa por medio del mejoramiento de la administración de la investigación, así como de crear un mejor entendimiento del papel y valor de la investigación industrial. Uno de los puntos de mayor preocupación del EIRMA es el método para seleccionar proyectos de investigaciones apropiados.

Manufacturers' Associations Foster Industrial Development

A study undertaken by the United Nations Centre for Industrial Development on the role of manufacturers' associations in industrial development reflects an increasingly organized effort by these associations in varied fields, such as industrial planning; management and productivity; market research; feasibility studies; industrial training and marketing; and patent and trademark services.

Les associations de fabricants stimulent le développement industriel

Une étude entreprise par le Centre du développement industriel des Nations Unies sur le rôle des associations de fabricants dans le développement industriel a permis de constater un accroissement de l'effort méthodique de ces organisations dans différents domaines, comme la planification industrielle, la gérance et la productivité, l'étude des marchés, les études de rentabilité, la formation industrielle et le marketing, les brevets et les services pour marques de fabrique.

Las asociaciones de fabricantes fomentan el desarrollo industrial

Un estudio llevado a cabo por el Centro para el Desarrollo Industrial de las Naciones Unidas sobre el papel de las asociaciones de fabricantes en el desarrollo industrial refleja un esfuerzo organizado y en constante aumento por parte de estas asociaciones, en varios campos tales como: programación industrial, administración y productividad, investigación del mercado, estudios de factibilidad, enseñanza y comercio industrial, servicios de patentes y marcas de fábrica.

Malaysia Plans for Industrial Development

Malaysia has already taken three basic steps in its programme for industrial development. These are: (*a*) establishment of the Standards Institution of Malaysia (SIM); (*b*) organization of a Federal Industrial Development Authority (FIDA); (*c*) formation of the National Institute for Scientific and Industrial Research (NISIR).

La Malaisie prépare son développement industriel

La Malaisie a déjà entrepris trois démarches essentielles pour son développement industriel: *a*) établissement de l'Institut de normalisation de Malaisie (SIM); *b*) établissement d'une Organisation fédérale pour le développement industriel (FIDA); et *c*) formation de l'Institut national pour la recherche scientifique et industrielle (NISIR).

Malasia se prepara para su desarrollo industrial

Malasia ha dado ya tres pasos fundamentales para su desarrollo industrial. Estos son: *a*) Establecimiento de un Instituto de Normalización de Malasia (SIM); *b*) Establecimiento de una Organización Federal para el Desarrollo Industrial (FIDA); *c*) Fundación del Instituto Nacional para Investigaciones Científicas e Industriales (NISIR).

Australia Will Aid Industrial Research and Development Efforts in Industry

The decision of the Australian Government to grant a substantial sum to industry in support of research and development was recently announced. Eligibility for grants will be limited to those firms which increase their own spending for research and development.

Nouvel essor de la recherche et du développement en Australie

Le Gouvernement australien a récemment annoncé sa décision d'accorder à l'industrie une aide financière substantielle pour supporter la recherche et le développement. Seules les firmes augmentant leurs propres investissements pour la recherche et le développement seraient susceptibles de recevoir une donation.

Nuevo ímpetu de investigaciones y desarrollo en Australia

El Gobierno de Australia ha anunciado recientemente su decisión de otorgar a la industria una suma importante para promover la investigación y el desarrollo. Sólo las firmas que aumenten sus gastos en investigaciones y desarrollo podrán recibir ayuda

Foreign Investment in Korea

The new Korean foreign investment law is expected to induce the flow of foreign capital into Korea. This will be accomplished by abolition of the 25 per cent limitation on share ownership; elimination on remittance of profits by foreign investors; and exemption from income, corporation and property tax for the first five years of a foreign-financed corporation.

Investissements étrangers en Corée

La nouvelle loi coréenne sur les investissements étrangers devrait encourager l'apport de capitaux étrangers en Corée. L'abolition de la restriction sur la possession de seulement 25 pour cent des actions, l'élimination de la remise des profits par les investisseurs étrangers et l'exemption d'impôts sur le revenu, sur les sociétés et sur la propriété pour les cinq premières années d'une société financée par des capitaux étrangers constitueraient les éléments essentiels de cette loi.

Inversión extranjera en Corea

Se espera que la nueva ley de inversión extranjera coreana induzca la circulación del capital extranjero en Corea. Esto se llevará a cabo por la abolición del límite del 25 por ciento en la propiedad accionista; la eliminación en la remesa de ganancias por parte de los inversionistas extranjeros; la exención de impuestos sobre la renta, sobre ganancias de las corporaciones y la propiedad, por los primeros 5 años, para una corporación financiada por fondos extranjeros.

United Nations Interregional Symposium in the Metal-working Industries—USSR

Symposium interrégional des Nations Unies sur les industries métallo-mécaniques – URSS

Simposio de las Industrias de trabajos en metal—Unión de Repúblicas Socialistas Soviéticas (URSS)

United Nations Experts in Industrial Development Activities and Positions Available

Experts des Nations Unies en matière de développement industriel: activités et postes disponibles

Expertos de las Naciones Unidas en desarrollo industrial: actividades y cargos disponibles

From the Literature

Tiré de la littérature

De la Literatura

United Nations Industrial Development Organization

"The General Assembly . . .

". . . Considering the widespread desire for a comprehensive organization capable of intensifying, co-ordinating and expediting the efforts of the United Nations system in the field of industrial development . . .

". . . Decides that the United Nations Industrial Development Organization . . . established as an organ of the General Assembly, shall function as an autonomous organization within the United Nations . . ."

The words of this resolution, approved on the 17th of November 1966 (A/RES/2152(XXI)) by the United Nations General Assembly, officially heralded the creation of a new Organization within the United Nations family, to be known as UNIDO.

In a strict sense, the purpose of UNIDO is to accelerate the industrialization of the developing world. In broader terms, however, the very act of its creation exists as a constant reminder of those factors which gave impetus to its birth. The facts are that the economic power of the world is in the hands of those who have industrialized, and generally speaking, the strides taken by developing countries over the past twenty years in an effort to boost themselves to a level where they can successfully participate have not been rapid enough.

UNIDO's role will be to help change that picture. In exercising its mandate to deal with the general and technical problems of industrialization, including the establishment and expansion of industry, it will act as co-ordinator of the international forces which are now mobilizing to further the cause of industry in these nations.

Responsibilities for co-ordination go hand in hand with those of co-operation. As a central clearing house for the activities of the United Nations system in this field, UNIDO will maintain close ties with the United Nations specialized agencies, the International Atomic Energy Agency (IAEA) and the United

Nations Conference on Trade and Development (UNCTAD), as well as with other regional bodies including the intergovernmental and non-governmental organizations.

The resolution calls for the establishment of UNIDO's forty-five member Board, elected by the General Assembly, which will reflect the principle of equitable geographical representation. In striving to further UNIDO's goals, the Board will initiate policies for effective action and review the Organization's co-ordinating activities with the family of United Nations agencies. Its jurisdiction includes control over the effective utilization of resources. UNIDO will report to the General Assembly on its annual activities.

UNIDO: Action-oriented

The activities of UNIDO, which will be "action-oriented", can conveniently be separated into two categories: those which are *operational* and those which are concerned with *studies and research programmes* in support of these operations.

One of UNIDO's first major undertakings will be the International Symposium on Industrial Development, the first meeting of its kind, which will take place in December 1967 in Athens.

The operational approach has many facets. UNIDO, in encouraging the rapid industrialization of developing countries, can make recommendations for national, regional and international action. The success of these recommendations depends to a great extent, first, on the application of the most effective industrial methods of production, programming and planning, which take into account the experiences of countries with different social and economic systems; and second, the construction of the necessary administrative and institutional framework within which these processes can take place.

Once the seeds for successful industrialization are planted, their growth depends on suitable climatic conditions. One primary condition is a solid foundation, often referred to as "technology" or "know-how". UNIDO intends to build the resources of technology by disseminating information on technical innovations and by assisting in the implementation of practical measures for the application of such information. The accomplishment of the latter would, for example, include the establishment of research centres in these countries.

Government initiative in making requests for the formulation of certain industrial projects will be carried out by UNIDO through various measures, including feasibility studies. Initiatives for planning taken by regional or sub-regional groupings, where they exist, or originating from UNIDO itself, will be carried out in close co-operation with the regional commissions and the United Nations Economic and Social Office in Beirut.

UNIDO will also be in a position to strengthen two other arms of industry; first, by advising and guiding governments in the efficient exploitation

of natural resources, raw materials, by-products and new products which relate to the industrial development scene; and second, by offering practical assistance in training technical and other appropriate categories of personnel needed for this development.

A new area of responsibility which was not emphasized by UNIDO's predecessor—the Centre for Industrial Development—is the improvement of the international system of industrial property. This is needed to accelerate the transfer of technical know-how to developing countries and to strengthen the role of patents, consistent with national interests, as an incentive to industrial innovation.

In support of the above operational measures, UNIDO will undertake action-oriented studies and research programmes, which represent the second category of activity. These include, in particular, the compilation, analysis, publication and dissemination of information concerning various aspects of the process of industrialization. These aspects encompass technology, investment, financing, production, management techniques, programming and planning.

Financial framework

The financial framework for the new Organization can most easily be understood through a similar two-category mechanism. Simply stated, the administrative and research activities will be covered by the regular budget of the United Nations. Operational activities, on the other hand, will be financed from three different sources: voluntary contributions to the Organization; participation in the United Nations Regular Programme of Technical Assistance; and participation in the United Nations Development Programme, on the same basis as other participating organizations.

A new programme, designed as an immediate source for financing special needs of developing countries in the area of industrialization, was initiated early in 1966. Known as Special Industrial Services (SIS), this programme acts as a trouble-shooting device and provides a range of services required for new or existing projects in the manufacturing field. Essentially it fills a gap between the initial feasibility study and the finalization of financial arrangements for capital investment. SIS meets practical needs which often cannot be quickly accommodated by other existing United Nations programmes. Expert services are now made available on short notice to deal with specific questions or problems of manufacturing.

UNIDO, the successor of the Centre for Industrial Development, officially became operational in January 1967, and will continue to function from United Nations Headquarters in New York until it moves to its new site in Vienna, Austria.

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Know-How and its Transfer — Do We Know How?

By J. C. Ramaer*

Know-how

The article in the first issue of *Industrial Research News* (vol. I, No. 1), "The Role of Industrial Patents in the Transfer of Technology to Developing Countries", provokes thinking in the whole field of know-how, and especially on its transfer between enterprises. Patents are a key element in know-how, but just as a key has no meaning without a lock patented know-how often has no meaning without its complement of non-patented know-how. That non-patented know-how consists of a countless number of details on how to run organizations and machines; how to handle materials, and how to sell, finance and administer. The majority of all these details in themselves need not be original, but knowing them all is essential to a successful industry.

A short description may clarify this point.

Research and development continually leads to new know-how on materials, parts, processes and products. Even if materials, products and processes are already well known, laboratories will continually have to conduct tests in order to check quality. That information in itself constitutes a body of know-how on the state of quality. A similar point can be made in general on up-to-date information, and efficiency, cost and personnel policy.

As far as products are concerned, drawings and parts lists setting out in detail the construction of the products are an essential element. Standardization sheets specify chemical and physical properties of materials, parts and products, as well as tolerances setting limits for variations in these properties.

Improvements leading to modifications cause continuous change in know-how on most products—especially those that are affected by rapid technical change.

Similar points can be made on manufacturing processes: market, technical and cost estimates are necessary to make proper production planning possible. Later, in the plan execution stage, continuous checks have to be made so that plans can be changed in time and future plans drawn up.

Factory design and layout, technical details on machinery, tools, maintenance, lighting and ventilation of buildings in accordance with requirements set by efficiency and safety regulations are essential elements of manufacturing know-how. Working instructions are necessary for correct storage, assembly and inspection of parts and products. As a result of improvements in working methods, such instructions are continually altered, even in cases where the product design remains the same.

In order to man, finance and administer the industry, to buy what it needs, and to sell what it makes, bodies of know-how will have to exist. Once they are in the hands of buyers, many industrial products will require service, an activity that may involve more people than production of the article proper (e.g., in the case of many durable consumer goods, professional equipment etc.). Again, part of this know-how will be included in manuals and sheets, and part of it will be stored in the hands and brains of people who have acquired it over the years.

This brief summary of industrial know-how may already demonstrate how many-sided that element of an industry is.

Industrial development means finding an answer to the problem of how to transfer know-how successfully from one enterprise to another. Here we touch upon a field that is very old, but in which many mistakes are still being made. Therefore it seems appropriate to raise the question: What are the conditions for a successful transfer of know-how?

Conditions for transfer

A first condition is that proper and relevant manuals are produced. This means that the enterprise supplying the know-how should have technicians and other staff members who not only possess a thorough knowledge of the process involved, but who also master the art of preparing good manuals. The fact that manuals for relatively simple consumer goods are sometimes very poor shows that writing clear, comprehensive manuals really is an art. Of course the authors of the manuals should also have proper insight into the level of competence of the technicians of the enterprise at the receiving end. If the differences in level and background are great, special problems present themselves. Thus, a simplification of text and drawings may be necessary, as a way of adapting techniques to conditions in a developing country.

A second condition is that written know-how be supplemented by having people go to the party absorbing the knowledge to provide on-the-spot guidance. A certain amount of learning on the job will inevitably have to take place. There are always details that can be demonstrated more clearly by persons already experienced in a particular process. Anyone who has learned a trade during his life e.g., carpentry – will readily understand this.

Enterprises concerned with transmitting know-how to other firms will therefore require a special staff for this purpose. This staff should not merely "know its business", but also know how to find out what know-how is valuable to the receiving party and how to pass it on. Successful execution in this respect is also an art.

Thirdly, the transfer of know-how from one industry to another takes time for the simple reason that it involves so many details, and donor and recipient technicians must

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develop mutual trust. The failure of many contracts of short duration is due to insufficient time to complete the job of transfer of know-how. In other words, continuity is missing. This is particularly true if the transfer of know-how involves a complete process that is quite new to the receiving firm. If the receiving party lacks only a few details of know-how and already has considerable experience, absorption may take less time.

Fourthly, the men sent out to transfer the know-how know themselves that techniques cannot always be copied exactly, particularly when the transfer takes place in countries with a different climate and different raw materials. Often the experienced man will have to co-operate with his apprentices to work out solutions or "gimmicks" in addition to those he has brought along. If such "gimmicks" lead to changes in machinery and similar radical measures, we may speak of "adaptation of techniques". There is always some degree of adaptation taking place, owing to differences in raw materials, degrees of moisture and temperature. The entire process involves technical co-operation, not just technical assistance, as well as expense and time. Properly prepared manuals are vital in preventing such waste.

Because technical change and technical adaptation is going on all the time, owing to inventions (source of new patents), new designs and new products, the transfer of know-how will continue. This is another reason why continuity is a condition for success. The receiving firm then in fact buys a subscription to new know-how. Here a "buy or make" problem presents itself for the subscribing enterprise. Owing to the rising cost of research and development "know-how autarky" becomes unbearable and specialization is on the increase. This is one of the reasons why the flow of know-how between enterprises within industrialized countries is also on the increase.

Fifthly, something that could be called an "integrated" provision of know-how is essential. It is often pointless to send out a man who is a capable technical specialist, but who has no eye for the indireet changes inevitably brought about by the transfer of new techniques. The introduction of a new process or product will have consequences in the field of personnel policy, or organization management and structure; or cause wage system revisions and consequences in sales and servicing. All this must be taken into account. The provision of pure technical know-how will have to be accompanied by the provision of know-how in all fields that will be indirectly affected. Here we touch upon an iron law: real life cannot be divided into neatly separated compartments.

In summary, we can say that the transfer of patented and non-patented know-how from one enterprise to another can only take place successfully if it involves (*a*) properly prepared manuals; (*b*) learning on the job, and the right staff to undertake both of these jobs; (*c*) continuity; (*d*) technieal co-operation; and (*e*) an integrated provision of technical know-how with know-how in other fields indirectly affected by the technical change.

On paper it appears simple to mention five conditions for success. Unfortunately, it is considerably more difficult to deal with real-life complications that develop when people have to learn and co-operate!

Similarly, it is easier to talk and write on the transfer of know-how in general terms than it is for two enterprises to come to an agreement in a concrete case.

Know-how, being an expensive item in itself, is also expensive to transfer because a proper transfer requires highly capable staff. A potential buyer of know-how will often consider the cost very high. On balance, this transfer is also a delicate matter for the supplying enterprise, because its success or failure has a bearing on the name of that company. A successful transfer then becomes vital to maintaining goodwill with other enterprises; consequently the potential supplier will want certain guarantees. Thus the two parties will often decide to make an agreement.

It seems appropriate to specify the items that have to be included in licence or technical assistance agreements.

Agreements: What to consider?

The Japanese National Committee of the International Chamber of Commerce has drawn up a list that deserves careful attention. The list includes the following items:

(*a*) Name of licenser and licensee;
(*b*) Description of licence: whether it is a patent or know-how or combination of both, and whether it includes all the patents and know-how that the licenser expects to possess in the future;
(*c*) Area where licence is granted;
(*d*) Whether it is an exclusive licence prohibiting sublicence;
(*e*) Method of payment of royalties: lump payment or payment in instalments or payment in proportion to sales or production;
(*f*) Whether minimum guaranteed royalties are required;
(*g*) Dispatching of technical instructors and share of expenses of dispatching;
(*h*) Foreign exchange rate to be applied to royalty payment;
(*i*) Share of payment of taxes levied in connexion with agreement;
(*j*) Licensee's obligations concerning quality control, maintenance of price and promotion of sales;
(*k*) Use of licenser's trade mark on the products of licensee;
(*l*) Supply of materials and production equipment by the licenser;
(*m*) Obligation of licensee to inform licenser of all patents and know-how developed by licensee;
(*n*) Licensee's obligation to report on production, production plans, sales plans and other matters: especially, obligation to report on sales made through sales agencies;
(*o*) Licenser's right to inspect plant facilities of licensee;
(*p*) Licensee's obligation to maintain secrecy of know-how during the period of the license and for a specific period after its expiration;
(*q*) Measures to be taken in the event of the other party's suspending business, changing management or transferring business to a third party;
(*r*) Obligation of licenser to assure the effectiveness of patent and know-how;
(*s*) Period of agreements;
(*t*) Payment of damages and compensation in case of violation of terms of the agreement.

At the time of concluding the licence agreement, there are cases in which agreements are made for the selling price

Transfer of "know-how" in action. Technician being trained in use of electronic measurement apparatus.

of products, the designation of areas in which the products are to be sold, the control of production, compulsory purchases of designated materials and other matters. In such cases, care should be taken that such agreements do not violate the anti-monopoly regulations of the countries concerned".[1]

A proper agreement protects parties against misunderstandings and the resulting waste and frustration.

Role of international organizations in the transfer of know-how

In conclusion, mention should be made of the fact that the United International Bureau for the Protection of Intellectual Property (BIRPI) and the United Nations are studying legal problems connected with know-how. BIRPI specialists have worked out a "Model Law for Developing Countries on Inventions", which has been studied by a "Model Law Committee". The Committee was composed of representatives of twenty-two developing countries and observers from the United Nations and other international organizations. The Committee took the viewpoint of the "average developing country" and concluded that the draft respects the special needs of the developing countries and represents a useful model for legislation.

In comparison to the transfer of capital, the transfer of know-how seems to have received relatively little attention in private, governmental and international circles alike, yet the international transfer of know-how is as important as that of capital. Hopefully, this gap will soon be closed.

[1] See "Promotion of Joint International Business Ventures in Asia and the Far East", report by the Japanese National Committee of the I.C.C., document No. 520/75, 4 March 1964, v. 1, pp. 11-12.

DECHEMA: Deutsche Gesellschaft für chemisches Apparatewesen

(German Association for Chemical Equipment Construction)

By D. Behrens, Director

DECHEMA is a techno-scientific association, the functions of which lie in the field of chemical technology. Its staff comprises about 3 000 chemists, engineers, physicists and industrialists. Its administrative and scientific headquarters are at Dechma-haus in Frankfurt am Main *(Figure 1)*.

Role 1: Achema Exhibition-Congress

Of all DECHEMA's undertakings, the Achema Exhibition-Congress of Chemical Engineering, which has been held approximately every three years since 1920, should be mentioned first. This congress is linked with a large exhibition of chemical apparatus, laboratory equipment, structural materials for chemical plants, instruments for measurement and control, and equipment for nuclear technology. The next Achema meeting will take place from 21 to 29 June 1967, in Frankfurt; the exhibition is expected to cover an area of 82 000 sq. m., with the value of the apparatus to be displayed expected to exceed DM 100 million ($US 26 million). A main theme for discussion will be "The role of Chemical Technology in the Developing Countries".

Achema is not a market-place for the sale of equipment, but is rather for the encouragement of technical discussions between chemists, physicists and engineers for whose use the apparatus is intended, and the engineer-designers who have developed it. The congress includes an extensive programme of lectures and visits to chemical factories and equipment-manufacturing works.

In preparation for each Achema congress, DECHEMA publishes the *Achema Year-book*, which is sent to registered members and which contains information on chemical science and technology in Europe. It comprises three volumes: Volume I contains about 1 100 pages of reports from 320 research establishments and technical college departments; Volume II comprises about 270 technical progress reports from chemical manufacturing firms; and Volume III provides, under 7 000 headings, a directory of firms having special experience in their respective fields. The next *Achema Year-book*, of about 2 300 pages covering the years 1965-1967, will appear early in 1967. Volume III and portions of Volumes I and II are published in English and French.

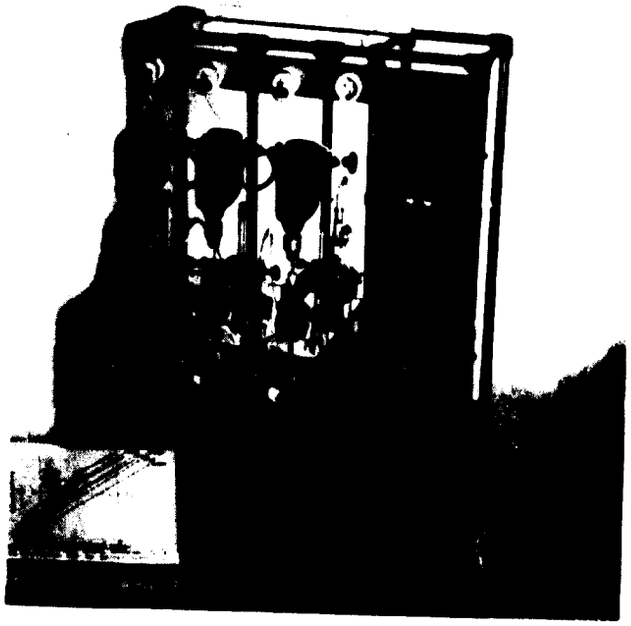
Figure 1. Headquarters of DECHEMA at Frankfurt am Main.

Role 2: A digest of scientific literature

A further focal point of DECHEMA's activities lies in the documentation of scientific literature; the "Table of Materials" is of special international interest. The preface to a pamphlet on this table includes the following:

"Every year corrosion causes a loss of billions of dollars to the national economy. The prevention or minimization of corrosion by protective methods and by suitable selection of materials requires a high degree of ability on the part of the plant constructor, since he must decide not only on the best compromise between chemical stability, physical properties, and 'workability' (machinability), but at the same time keep costs at an acceptable level.

"Materials available for construction are becoming more numerous. Further, new materials with improved properties are constantly developed from traditional materials, thereby broadening the field of use for general or specific applications. No plant engineer can afford the time, when making specific equipment decisions, to cover all the available literature on chemical resistance; nor is his knowledge of chemistry always sufficient to properly absorb the material. In addition, papers relevant to corrosion are published in almost every language. It is for this reason that DECHEMA began publishing in 1953 Corrosion Data Sheets, which offer in digest form critical reviews of relevant literature. So far, the action of about 900 chemicals has been dealt with in some 2 600 pages."



Figures II and III. Apparatus for measuring effect of flow on rate of corrosion.

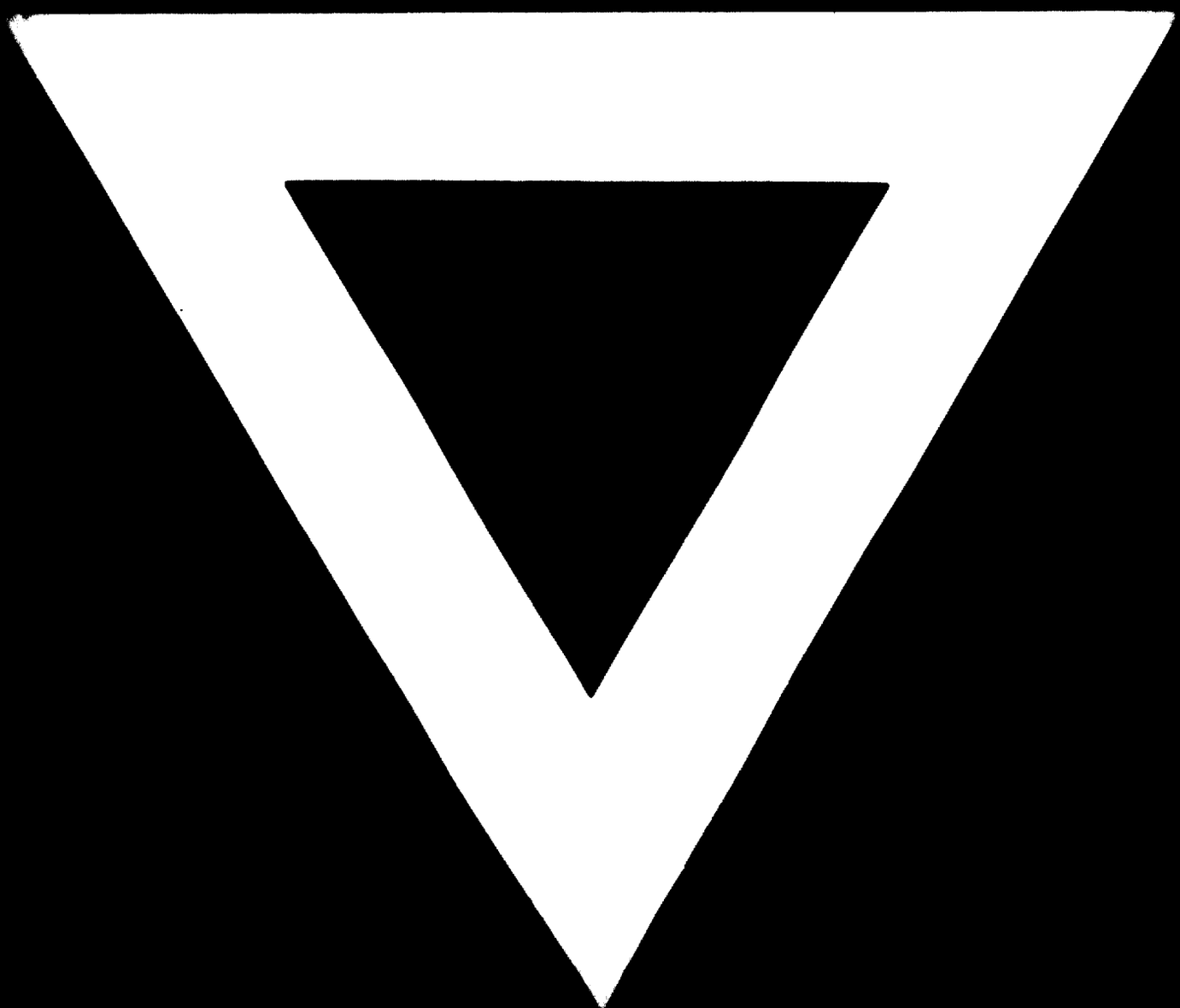
Role 3: Scientific activities—Research and education

Along with its work in literature, DECHEMA pursues scientific activities in both research and education. At the Dechema Institute, fundamental research is carried out in chemical technology (kinetics and mechanisms of technically important chemical reactions), and on corrosion and its prevention. In the field of corrosion, combined chemical, mechanical, and thermal stress of the material, plus characteristics of corrosion systems in chemical technology, form the central point around which scientific work proceeds. An example of this is the effect of flow on the rate of corrosion, for which DECHEMA developed a new method of measurement *(Figures II and III)*.

A special team is concerning itself with the elucidation of instances of corrosion which have occurred in practice, as well as with the problem of the experimental selection of suitable materials for a given corrosion system. In this connexion modern electrochemical methods are being applied.

As an extension of research activities, lecture series and seminars are conducted for students, on both undergraduate and post-graduate levels, in "Technical Chemistry", "Instrumentation for Measurement and Control" and "Corrosion". DECHEMA makes available modern apparatus and the necessary accessories for these courses so that they are always conducted from the most modern vantage point and constitute an experimental field for new methods of academic instruction. In addition, a course is held annually for lecturers from developing countries, arranged on behalf of the German Foreign Ministry in conjunction with the Technical University of Karlsruhe.

DECHEMA's concern, as a scientific association, is to facilitate the continuous exchange of information between chemists and engineers whose work lies in the field of chemical technology.



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