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10 July 1968

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United Nations Industrial Development Organization

Second Interregional Symposium
on the Iron and Steel Industry

Moscow, USSR, 19 September - 9 October 1968

A-10-2

THE VALUE OF THE TECHNICAL PRESS
IN THE DEVELOPMENT OF A STEEL INDUSTRY AND ITS TECHNOLOGY ^{1/}

by

R.L. Deily
United States of America

^{1/} The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. The document is presented as submitted by the author, without re-editing.

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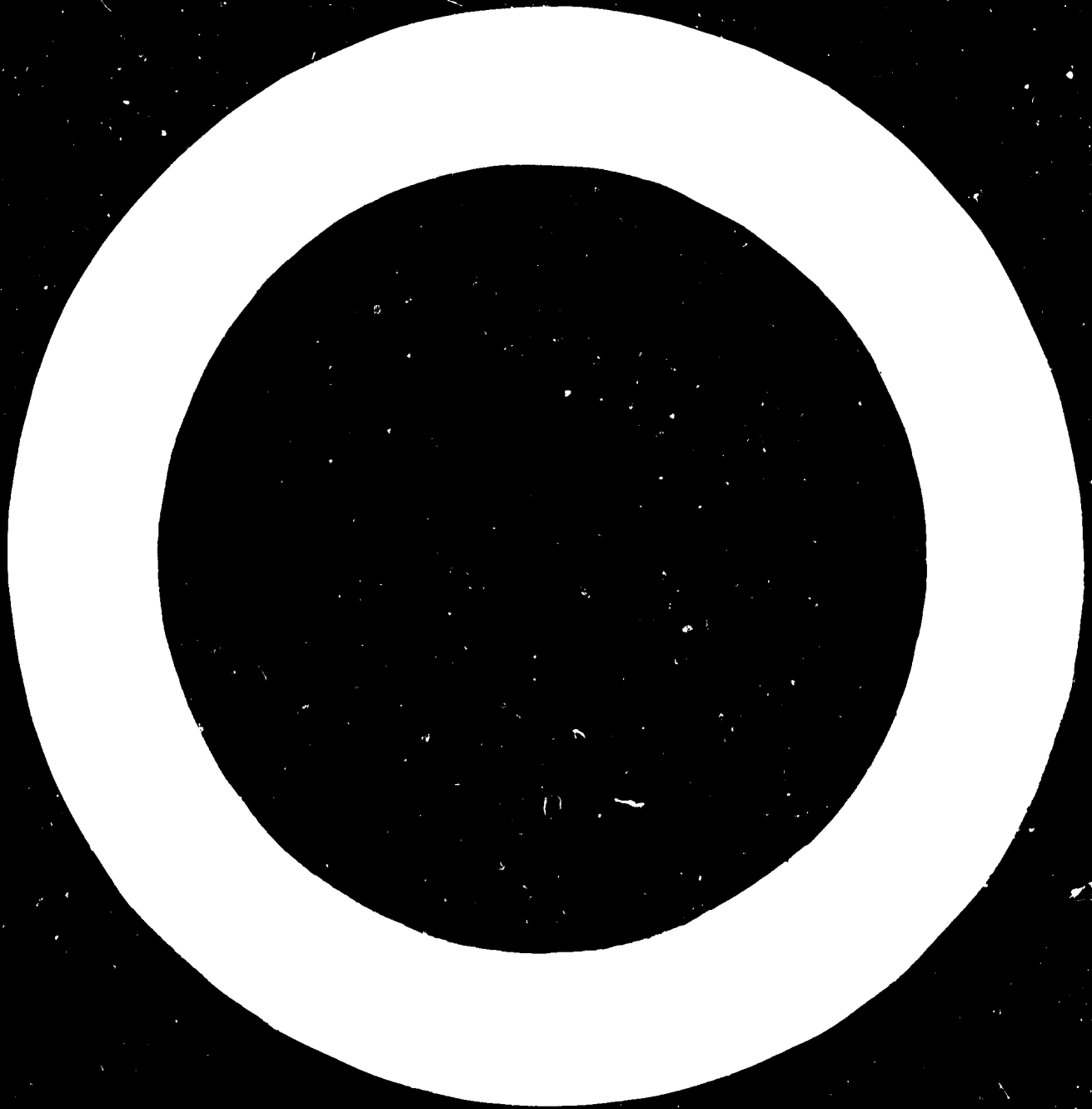
Richard L. Deily,
United States of America

SUMMARY

To exchange information between countries on recent technological improvements in the iron and steel industry is one of the stated purposes of this 2nd symposium. The *raison-d'être* of the technical press in any country is the exchange and dissemination of information on technological improvements. This parallelism of aims is even greater when the technical press is considered to include "trade journals", whose major function is the exchange and dissemination of information on commercial (economic) questions of interest to an industry.

* This is a summary of a paper issued under the same title as ID/WG.14/54.

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The paper examines both the technical and trade press publications of several developed countries to show how these publications reflect the technical and economic principles affecting their steel industries. It is hoped that this study of the techno-economic steel industry press in developed countries will result in suggesting guidelines as to how an effective press may grow in the developing countries.

Since the writer is most familiar with the English language press, especially in U.S. and Great Britain, this study concerns itself primarily with that language and those countries.

It is recognized that notable steel industry technical publications appear in every country with a steel industry, and in most major languages. References to these publications is made, both to point out similarities and differences to those of the two English-speaking countries.

A most important consideration is that the technical press of a highly developed country like the U.S. is specialized over many fields. In order to examine the whole spectrum of technical and economic articles regarding the industry, it is necessary to look at many publications not obviously related to the steel industry. Thus in addition to those publications on steel production and engineering, others exist on steel distribution, design, fabrication and materials application. Likewise, there are trade papers on labour, finance and other important aspects of such a basic industry as steel.

Typical examples of both the publications and selected articles which relate to the steel industry are examined. These examples are presented both from the standpoint of what is available (the technical press side) and who is interested (the steel industry side). The discussion looks especially at how the interplay of these two groups allows the technical press to provide the kind of information needed by the steel industry people.

Articles from the author's publication (33, The Magazine of Metal Producing) are used to illustrate interpretive analysis of steel industry events. During the past several years 33 has published a series of articles on practices and processes in the industry. These have dealt with primarily the U.S. industry, with some discussion of problems and practices in most other countries with a substantial steel industry. Some of these major articles were on raw materials of steelmaking (scrap, coke, ferroalloys, oxygen and others) along with hot and cold strip mill practices and electric and basic oxygen steelmaking. In addition, 33 has published company studies showing how various steel companies in the U.S. have grown to their present position.

As a look at future technical publication possibilities, the extension of such process and practices studies to include the problems of developing countries will be examined. It is clear that not all steel industry practices in developed countries are applicable as is to developing countries.

Therefore, what practices are useful for less developed countries as well as modifications of practices that could be reported on (both by 33 and by other publications) are considered as part of a look at world-wide steel practices.

In summary, the steel industry technical-trade press in developed countries (especially U.S. and Great Britain) is described. This description shows broadly what publications are available, what industry aspects they report on, and how steel industry personnel benefit. It is hoped that this description of the technical press will suggest ways in which an indigenous technical press might grow in the developing countries. Finally, some analyses of the possibilities of the developed countries' technical press routinely discussing developing country steel industry problems are presented as a future technical press trend.

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To exchange information between countries on recent technological improvements in the iron and steel industry is one of the stated purposes of this second symposium. The raison-d'etre of the technical press in any country is the exchange of dissemination of information on technological improvements (see pages 15 and 17). This parallelism of aims is even greater when the technical press is considered to include "trade journals", whose major function is the exchange and dissemination of information on commercial (economic) questions of interest to an industry.

The exact number of technical journals published world-wide is not known, but it is very large. Ulrich's International Periodicals Directory¹ lists 12,000 scientific, technical and medical periodicals in its 1967-1968 edition. This United States based directory includes lists of periodicals from 118 countries. It is likely that the publications of the United Kingdom comprise the largest group in any single country. There are some 2,082 trade and technical publications alone in the UK, covering every conceivable field of interest with usually two and sometimes more publications in each area. With the UK's century-old commonwealth associations, the UK's trade magazines have developed world-wide circulation. This coupled with the numerous special subjects covered, makes the UK trade and technical journals a truly world-wide media of communication.

The United States also has an extensive trade and technical journal activity, with some 2,300 publications. While not usually giving as world-wide coverage as the British publications, in the special area of steel industry technical press coverage the US probably leads the world. This is understandable, since the US has the largest steel industry of any single country. The number of trade and technical journals in a given industry reflects, at least roughly, the size of the industry. With over 100 million net tons of finished steel consumed annually and over 130 million net tons of raw steel produced annually, the US steel industry needs, and can support, a large technical press.

What steelmen want to read what stories

The coverage of the US technical press can best be examined by looking at

1 International Periodicals Directory, Ulrich, 12th edition, 1967-68 R. R. Bowker Company, New York and London.

Vol. 1 - Scientific, Technical and Medical Periodicals.

Vol. 2 - Arts, Humanities, Business and Social Sciences.

the various interest groups in the industry. Interest groups are considered because the technical (and trade) press of a highly developed country tend to become more and more specialized for particular audiences. These audiences are listed on pages 16 to 20, along with some of the US printed publications that are available for each group. The groupings of steel industry personnel shown have many overlapping areas, so that splitting the groups so sharply is somewhat artificial.

As might be expected, the largest number of publications for the US steel industry is aimed at the steel plant operating and engineering groups. Here is where the action is, where the 123 million tons of steel that have been made annually in the US are melted and cast and rolled forged, heat-treated, finished fabricated and shipped. Here is where the majority of the 700,000 employees of US steel companies have their activities. Here is where the United States steel industry spends annually most of its nearly \$7,000 million for wages and salaries and over \$8,000 million for materials, supplies, freight and other services. With such a huge market, there is a widespread activity in all kinds of material as well as engineering, construction and machinery. Not only the expectable steel industry raw materials - iron ore, coal, coke, natural gas, water, electric power, lubricants, machinery and so on. There is also used by the steel industry a myriad of items such as specialized paper, strapping, railroad supplies, computers, electric light bulbs, sanitary supplies, food and all the requisites used by man in his daily life.

Those persons responsible for all these items need technical and especially trade journals to keep informed. Operating and metallurgical and management people of the industry can then make the best decisions in purchasing and using all the material required as well as producing the best steel at the lowest cost. This large corps of operating and engineering personnel form the backbone of steel industry decision makers. However, there are two other groups working in the steel industry whose special function is liaison between the industry and related activities outside the industry. One of these groups is comprised of research people, the other one of market development managers (and product metallurgists). Both these groups have need for technical publications in subjects not normally associated as steel industry oriented.

The steel industry research people are active in every conceivable engineering and scientific field. In addition, the nature of research activity

is such that the researcher must keep abreast of as much new information as is possible. Consequently research libraries contain as many technical and scientific journals as their financial resources permit. In the US most steel industry research is conducted by individual companies, each of which has a research library. These libraries have on their shelves most learned scientific and technical journals, as well as thousands of books, abstracting services and all the paraphernalia for information dissemination that they can afford. (See box, page 21.)

Steel industry markets and the technical press

Steel industry products are themselves comparatively specialized, being sold to users each with his own peculiar problems. As a result, there are tens of thousands of different steel items with thousands of specifications. The industry has both metallurgical engineers and market development managers, each of whose job it is to know all about the specifications and markets respectively of each of the products. Markets* that exist in the US and which these men cover are in agriculture, transportation, highway construction, automobiles, architectural, consumer products, distribution, energy, equipment manufacture, and space and defence.

Each of these marketing areas has its own trade and technical press. For example, the railroad industry is covered by Railway Age, Modern Railroads, and others. Construction industry publications include Engineering News Record, Construction Methods, etc.

In summary, steel sales and sales engineering people in the United States

* The American Iron and Steel Institute in recent years has spearheaded a steel use promotion campaign which is "just about the biggest job the Institute has", to quote John B. Roche, President. In so doing, the Institute holds seminars, training sessions, prepares television material and is itself a major producer of publications about the steel industry - from a use standpoint (there are already over 200 in print). For instance, four times a year the Institute publishes Steel Products Merchandiser containing specific ideas as to how retail outlets of steel products can sell more steel products. For designers the Institute issues, also quarterly, Creative Steel Design. With similar activities in construction, farm market, home building and others, the Institute is attempting to expand steel markets in an important way.

must keep abreast of activities in many different markets. The total number of trade publications that are desirable to be read from this market standpoint is fairly large. It must be understood that only a handful of steel industry people read publications like Railway Age, Automotive Design News, etc., but these people have important influence in the steel industry. Their job: keeping abreast of technological and design changes in existing and potential steel industry markets; what kinds of steels are needed. When he knows this, the metallurgist's job is to make sure the steel industry can make the steels.

The market development managers also use the trade press to become familiar with activities in his particular market area. More importantly, the steel market development manager uses the trade press to get his ideas disseminated to that trade (railroad, agriculture, and so on). In the United States the trade press is the strongest tool for promoting uses of steel and thereby enlarging steel's markets.

How to pay for technical and trade publications

The publication of any periodical is expensive. Getting the required financial support is always a problem, whether in a developed or developing country. There are four sources of financing for technical publications. Each financing source will generally be involved in somewhat different type of interest area.

Four sources of publication finances

Governmental

Technical societies and trade associations

Individual Companies

Industrial Advertising

All four methods are used in most countries. However, there is a sharp difference between developed and developing countries in regard to industrial advertising revenue sources. Many industrially developed countries (especially Western European and the United States) have developed an extensive advertising industry - able to support many special interest publications. This source of technical press support is minimal, or lacking, in developing countries. The experience of the Western countries suggests that encouragement of industrial advertising will be of great assistance in the growth of technical press.

Government financing, technical publications

The sources of government financing are fairly obvious, not always easy to come by, whatever the technological status of a country. Yet, government support of publications of statistical data regarding a country's economy, of research work and frequently of translations of world-wide publications is essential in any country.

Technical societies and trade associations

The most extensive and important technical publications in the steel industry result from activities of trade associations and technical societies. These are supported financially by steel companies, individuals and by advertisers of products for the steel industry. Trade associations in the steel industry are usually designated Iron and Steel Institutes, and have been formed in every steelmaking country or region. The oldest is the Jerkontoret (Swedish Ironmasters Association) established in 1747. Other institutes such as The Iron and Steel Institute (British) 1869, Verein Deutscher Eisenhüttenleute, 1881, West of Scotland Iron and Steel Institute, 1893, all publish journals usually on an annual basis. The VDE publishes the bi-weekly Stahl u. Eisen, certainly one of the outstanding technical journals of the world's steel industry.

In the United States, the American Iron and Steel Institute publishes industry statistics, an annual journal with some technical and some trade information. In addition, the AISI is very active in publication of promotional information for increasing the use of steel in all its forms (see page 5).

Nearly all the steel industry Institute publications are more concerned with the trade rather than the operating aspects of the industry (Stahl u. Eisen is a notable exception). There are two major areas of interest in steel plant operations (1) the making of molten iron and steel, and (2) the forming of the steel into the semi-finished (or finished) products shipped out of steel plants. In the US there are two associations whose publications cover these operating fields:

The American Institute of Mining, Metallurgical and Petroleum Engineers (headquartered in New York, N.Y.) in its Blast Furnace, Open Hearth, BOF and its Electric Furnace Groups holds annual meetings in each area of interest. Publication of papers in each of these hot metal fields both as proceedings and in the Journal of Metals, provides a continuing survey of hot metal technology.

Since each year many contributors are from steelmaking countries outside the US, the AIME publications furnish an excellent world view of liquid metal technology.

The Association of Iron and Steel Engineers (headquartered in Pittsburgh, Pa.) holds frequent meetings (annually and otherwise). At these meetings operating aspects of the industry are discussed, oriented toward forming of steel and mechanical and electrical features of steel plants. The AISE publications, the monthly Iron and Steel Engineer (republished as an annual proceedings) along with its biennial Iron and Steel exposition form a repository of steel industry technology of major use to steel industry operating groups. Each year the AISE includes papers by steelmen from outside the US, so that its publications reflect world steel technology, especially of developed countries.

The Soviet Union, with a steel industry of well over 100,000,000 tons, publishes a large number of scientific and technical journals related to the industry. These journals cover mining, fuels, metallurgy, steelmaking, heat treating and steel uses, among other subjects. Most Russian journals are supported by the Academy of Sciences, USSR, other institutes and by ministries of the several industries.

Stal (Steel) published monthly since 1941, is sponsored by the State Scientific-Technical Committee of the Council of Ministers. This publication covers operating aspects of steelmaking and is a valuable survey of Soviet technology. An English translation of Stal is published monthly in Great Britain.

Other Comecon countries, notably Czechoslovakia and Poland, also publish steel industry journals and other related documents.

Trade publications - The Advertiser Pays

In the US (and Great Britain) there are many trade publications oriented toward the steel industry. Some of these are listed on pages 16 to 20 which also indicates that there are various groups of steel industry people so far as their special interests are concerned. Some publications, as noted, are aimed at all groups. These include daily newspapers (American Metal Market) weekly pricing and news periodicals (Iron Age and Steel) and monthly publications such as 33 Magazine. Other publications, in nearly every field of industrial activities, go to steelmen with interests in those fields.

Characteristic of nearly every trade and technical publication is its support by advertising. In the US (as well as Great Britain, France, Germany and

other developed Western European countries), industrial advertising supports, in the main, the publication in which it appears. (A minor source of revenue to trade publications is through subscription payments.) This advertising support allows the trade publication to exist and publish company and technology news about its industry. Interestingly enough, the advertising copy of the industrial advertisers is itself an important source of technical news as each competing company describes its skills and products.

Company publications - the company pays directly

Every steel company (and company in activities related to the steel industry) is likely to issue many publications. This is equally true of companies in developed and in developing countries. These company-produced publications are of two kinds - technical information and product promotion literature, and house organs. There is likely to be an important difference in emphasis between the house organs from developed versus developing countries. In the US, for example, house organs are usually employee-news publications. Employee activities, both inside and outside company affairs, are described. Company news is also printed, with the aim of telling employees about new installations, important events affecting the steel industry and their company.

Typical examples are Florida Steel Triangle, Lukens Life, U.S. Steel News and so on.

While most companies have similar employee-oriented publications (those from Japanese steel companies have outstanding beautiful format), there are additional company publications from steel companies of countries with comparatively small steel industries. These have technically oriented articles and help to fill the technical press needs of the industry. Several of the most useful of this type are issued by Broken Hill Proprietary Ltd. (500 Bourke Street Melbourne, Australia). The BHP Review is of the house organ type, with some company and personnel news. However, it also includes general interest articles about the iron and steel industry usually with an Australian background.

The second BHP publication is its BHP Technical Bulletin. This, in the words of its editor, is "produced by the Broken Hill Proprietary Co. Ltd. to disseminate technical information arising from operational and research activities in its organization. It is available to scientists, engineers, technologists, customers and industry generally, as well as educational and

governmental organizations. Readers are invited to consult the Company if they want any further information on any of the subjects discussed in the journal. Material may be quoted without reference, but acknowledgment would be appreciated."

While unusually scholarly, the BHP Technical Bulletin shares an underlying function with the frankly promotional as well as engineering and technical publications issued by many steel companies. This function is that of disseminating information as to the capabilities of the company. Such company publications include a wide variety of types. These range from description of individual steel products and their engineering characteristics to handbooks (Bethlehem and United States Steel's Alloy Steels and structural steel design books respectively, Carpenter Steel's descriptions of tool steels). Japanese Steel companies issue company and trade news pamphlets (in various languages besides Japanese and English) including news about industry and product development. In the US Allegheny-Ludlum has published for many years "Steel Horizons" with beautifully illustrated articles on stainless and special steel usages.

U.S. Steel Corporation has published (since 1920) the definitive "The Making, Shaping and Treating of Steel." The current Eighth Edition (1964) is a 1,300 page text-book on the raw materials, processes and products of iron and steel-making. This book is the best reference source available, in English, on operating aspects of the steel industry.

Technical sales publications

The technical sales publications of companies in developed countries are a widely used means of disseminating technical information. (Companies like International Nickel and Climax Molybdenum produce whole technical libraries as part of their technical sales efforts).

A long-standing way in which developing countries receive technical information is through affiliates of companies from developed countries. These affiliates are related financially in a variety of ways to the parent company. The financial arrangements are not germane to this discussion of technical literature (although they are a major item of concern to the developing countries). What is important is that the affiliate company is able to avail itself of the parent (US, Great Britain, France, Germany, etc.) company's facilities both in manufacturing and/or selling its brand of products in the developing country, and in disseminating the technical information about these

products that the parent company issues.

The author has had discussion with the president of a welding electrode manufacturer, based in a South American country and commercially an affiliate of a US welding-products manufacturer. The US company issues a large volume of technical information regarding its welding equipment and processes. This company works in the US through technically trained field representatives in disseminating welding know-how. The South American (and other affiliated companies to the US based company) are engaged in similar activities in their individual countries. Using the parent US company's literature and technology, they are acting as technical educators to welding process users in their own countries.

The South American executive is of the opinion that the commercial and management problems in running his welding electrode business are enough to keep him actively employed. It is his further belief that the limited resources, of his and other welding companies throughout most South American countries, can best be employed in the promotion of welding uses and practices. As to the processes themselves, the various welding methods which should be used in any given job, it is his opinion that such welding technology aspects are the same world-wide. Therefore, if he can obtain from reliable sources such as his affiliated US company the know-how for manufacturing the welding material and for applying such material in his customer's plants, he, and his countries' economy, are way ahead.

In summary there is a point of view that it is more advantageous in using its limited resources for a developing country to use available technology than to try to develop its own. As to steel industry and related technical information, it is the opinion of this Latin American executive that the available technical press from the US, France, England and Germany is sufficient for South American needs. Most technical persons (engineers and managers) in South America are able to use these publications as well as those printed in Spanish. Therefore, in the opinion of the South American, just as he can get commercial technical information from developed countries, his engineers and managers can also get adequate technical information from already available technical press.

However, the need for a domestic technical press in developing countries increases as the technological status of the country reaches a certain minimum level. Thus, in Latin America there are several countries including Brazil,

Mexico and possibly Argentina that have passed that level of domestic technology where a technical press is both possible and desirable.

Brazil's experience is the most instructive. This country is now manufacturing all types of industrial materials and products, including a substantial auto production (and even some machine tools). Brazil is an example of a developing country which in the last several decades through determined internal effort (along with help from outside sources, both governmental and corporate) made the transition from an extractive agricultural economy to an industrial economy.

As a necessary part of its present industrial economy, Brazil's steel industry has grown five-fold from 0.8 net tons in 1950 to 4.0 million tons in 1967. (Other Latin American steel production leaders are Mexico - 3.5 million, Argentina at 1.5 million and Chile and Venezuela both with 3/4 million net tons annual production.)

The record of Latin American countries clearly indicates that the growth of steel industry to such levels both is helped by a technical press and that the strong steel industry helps to create the climate for growth of an indigenous technical press.

One such agency is ILAFA (Institute Latinamericano del Fierro y el Acero) founded in 1959 at Santiago, Chile by the major steel and iron ore companies in Latin America. As one of its prime objectives, ILAFA is concerned with technical documentation, along with a data collection function as to steel trade in the area. ILAFA collects major steel publications from all over the world, including books, papers proceedings of conferences and meetings. These publications are in various languages, and translations are made available by ILAFA.

Information as to publications available are sent out monthly in the ILAFA publication "Documentation Siderurgica." This contains abstracts of the most significant articles that could be of use to Latin American steelmen. Photostats and/or translations of complete articles are sent to steelmen on request. It is reported that most translations requested are from English, French, German and to a lesser extent from Russian, Swedish, Czech and other languages.

The ILAFA people feel that nearly 80% of the most important technical literature on steelmaking is published in four languages - English, German, French and Russian. Therefore, ILAFA has a team of translators working in these

four languages at least. It should be noted that competent technical translators with a working knowledge of steelmaking are scarce.

One of the major technical press problems in the Latin American area is that of technical terminology: the use of different regional terms to designate the same product or facility (even in the same language, Spanish) is a permanent problem. Thus, in Chile and Peru, reinforced concrete bars are called 'barras para hormigon armado', in Argentina they are designated 'redondos', in Cuba and Venezuela 'cabillas', in Mexico and Uruguay 'varillas' and so on. The problem of technical terminology is world-wide. Even in English speaking countries with as close technical ties as the US and Canada (not to mention Great Britain) terminology can be different. For example, a torpedo (or submarine) car (US) becomes a torpedo ladle in Canada (this is the hot metal transfer car operating between the blast furnace and steelmaking furnace). It could be a useful function of the UNIDO group in its encouragement of steelmaking activities to have a technological dictionary prepared. The problems of such an undertaking are formidable, but its usefulness should make the effort worthwhile.

ILAFAs effort is worth noting as an example to follow by UNIDO countries. ILAFA is undertaking compilation of the Latin American Vocabulario Tecnico Siderurgico, with the co-operation of the Centro Nacional de Investigaciones Metalurgicas (Cenim) of Spain. The dictionary will cover eight sections as follows: 1) Iron ore making; 2) ore preparation, concentration and agglomeration; 3) blast furnace and other reduction processes; 4) steelmaking; 5) transformation; 6) heat treatments; 7) properties and tests, and 8) product nomenclature and defects.

English* will be used as the reference language, equivalents will be given in Spanish and Portuguese with indication of all senses of different terms, including regionalism. The glossary is intended to establish uniform steel terminology for use in Latin America, Spain and Portugal.

A second function undertaken by ILAFA is the publication of Revista

* The use of the term "transformations" in 5 above is an indication of terminology problems. What is suggested here is "The Working or Rolling and Forging of Steel." These titles would be more exact to an English speaking person than "transformations" which usually refers technically to the phase changes in steel during temperature changes.

Latinoamericano de Siderurgia (Latin American Steel Journal). Herewith (pages 22 and 23) is the title and second page of issue No. 95 of March 1968, showing the various items contained in the IIAFA journal, along with its circulation. In August 1968 Revista passed its hundredth issue, a matter of some pride to the editors. The survival of a publication aimed at, and by, the steel companies of a developing area is worth noting.

Where to for the developing countries

This brief survey of recent activities of the steel industry and related technical press in a developing area shows their close interrelationships in problems and opportunities. It is still true that industrial development requires the use of steel as the basic industrial material. The per capita consumption of steel is and will remain for the foreseeable future, the universal yardstick as to the level of developing-developed country (or area or region) industrialization.

The chairman of the newly-formed International Iron and Steel Institute, Dr. Hans-Gunther Sohl in his inaugural address noted that in the period from 1947 to 1965 the number of steel producing countries rose from thirty six to sixty. There will very soon be seventy countries that are steel producers.

Even though there is a current imbalance world-wide of import-export markets in steel, it can be anticipated that more developing countries (or areas or regions) will create a steel industry. World steel production has been doubling every twenty years in this century. With some 300 million tons in the late fifties, doubled production of 600 million tons would then occur by the late seventies. With 1967's world output of 500 million tons, it is likely that Dr. Sohl's prediction of 600 million tons will come to pass even sooner, probably by the early seventies.

It can be expected that the developing countries will produce their share of steel, both by increasing capacity of existing steel plants and by building new facilities. This, of course, is the underlying purpose of this symposium. It can be expected that technical and trade publications in all the myriad forms outlined in this survey, will both help, and be helped, by the growing world's steel industry.

What does the technical press do for steelmen

It is of some help in understanding how a technical press functions to look at why it is read. In common with all technical and management people, steelmakers have several specific reasons for reading technical press. Here they are:

- To increase their knowledge of the steel industry.
- To keep in touch with events in related industries.
- To broaden their knowledge of all industrial and technological activities.
- To keep informed as to who is doing what, especially in the steel industry.

Technical trade and scientific press serve several levels of interest:

Universities and research laboratories - training of engineering and management personnel and search for new knowledge requires extensive technical and specialized libraries where all publications might be needed.

Operating steel plants - here the technical and trade press must cover steel-making material and practices.

SELECTED TECHNICAL AND TRADE PUBLICATIONS

Steel Industry, United States
by Interest Groups

Of General Interest to All Groups

American Metal Market
Iron Age
Metalworking News
Steel
33, The Magazine of Metals Producing

Production (Operating)

Automation
Blast Furnace and Steel Plant
Combustion
Foundry
Industrial Equipment News
Industrial Heating
Iron and Steel Engineer
Journal of Metals
Maintenance
Modern Castings
Plant Engineering
Welding Design and Fabrication
Welding Engineer

Steel-using industries - here material specifications and material using practices are the theme of publications.

Steel industry suppliers -- here publications are in the fields of engineering and construction, machinery manufacturers, welding and other fabrication procedures, maintenance and general steel industry affairs.

Engineering

Engineering News Record
Iron and Steel Engineer
Heating, Piping, Air Conditioning
Mechanical Engineering
Plant Engineering

Mining

Engineering and Mining Journal
Journal of Geology
Minerals Processing
Mining Journal of AIME

Metallurgical

Acta Metallurgica
A.S.T.M. and Standards
Journal of Metals
Metals Progress
Publications in metallurgical engineers product field - see Sales list

Research

All publications listed are likely to be in some research man's area of interest.

In addition, research publications in specialized areas such as ceramics, instruments, physical metallurgy, physics, chemistry, etc., are used by steel industry research people.

Purchasing

Engineering and Mining Journal

Metal and Mineral Markets

Purchasing

Purchasing Week

Sales

Publications in salesman's product field:

Automotive Design Engineer,
other automotive publications

Engineering News Record

Marine Engineering Log

Modern Packaging

Oil and Gas Journal

Railway Age

Wire and Wire Products, etc.

Traffic/Transportation

Container News
Marine Engineering/Log
Modern Materials Handling
Modern Railroads
Railway Age
Transportation Journal

Industrial and Personnel Relations

Specialized publications in personnel, medical,
labour relations and safety.

Management and Executive

Besides the broad steel industry publications
listed above, the management and executive group
have business and financial publications such as:

Business Week
International Management
Forbes
Fortune,

business newsletters, confidential iron and steel
institute reports, etc.

Guide to metallurgical information

In looking at the steel industry technical and economic press a major problem is (a) to know where to find specific items so that (b) the individual can receive routinely only those publications he is actively interested in. For such ready access to specialized information, specialized libraries are available. In the US these libraries have formed the Special Libraries Association (founded in 1909). Librarians of business, professional, governmental and industrial organizations are members. The Association's function is to promote the collection, organization, and dissemination of information in specialized fields. There are 265 members, of whom about 100 are steel industry members. The number of special libraries in US steel companies is approximately fifty including the extensive American Iron and Steel Institute library in New York, N. Y.

The Special Libraries Association has published a Guide to Metallurgical Information a 222 page paperback book. The current edition is dated 1965 and is available (price \$7) from, Special Libraries Association, 235 Park Avenue S., New York, New York 10003, U.S.A. The Guide provides references to sources of information on all aspects of metallurgy and all metal elements. The largest number of references are on ferrous metals.

The SLA Guide to publications in the iron and steel industry is probably one of the most complete lists available. It includes sources of information published on a continuing basis, as well as general reference sources. Besides United States publications, references are given to publications of Australia, Austria, Belgium, Canada, China, Denmark, France, Germany (East and West), Great Britain, India, Italy, Japan, Netherlands, Norway; Russia, Spain, Sweden and Switzerland.

Along with the selected list of metallurgical publications in this SLA Guide, Ulrich's International Periodical Directory contains an exhaustive list of all world-wide technical and trade publications. Therefore, the present paper does not contain any listing of publications except for illustrative purposes.

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Economics of Steel Plant Maintenance, by H. Wiegel. Paper presented at the 7th Latin American Iron and Steel Congress, 1967 (p. 18).

Iron Ore in Latin America, by P.M. Bohomoletz. Paper read at the Joint ILAFA-IIM Meeting, New Delhi, February 1968 (p. 23).

Brazilian steel development program for 1968-1970 (p. 32).

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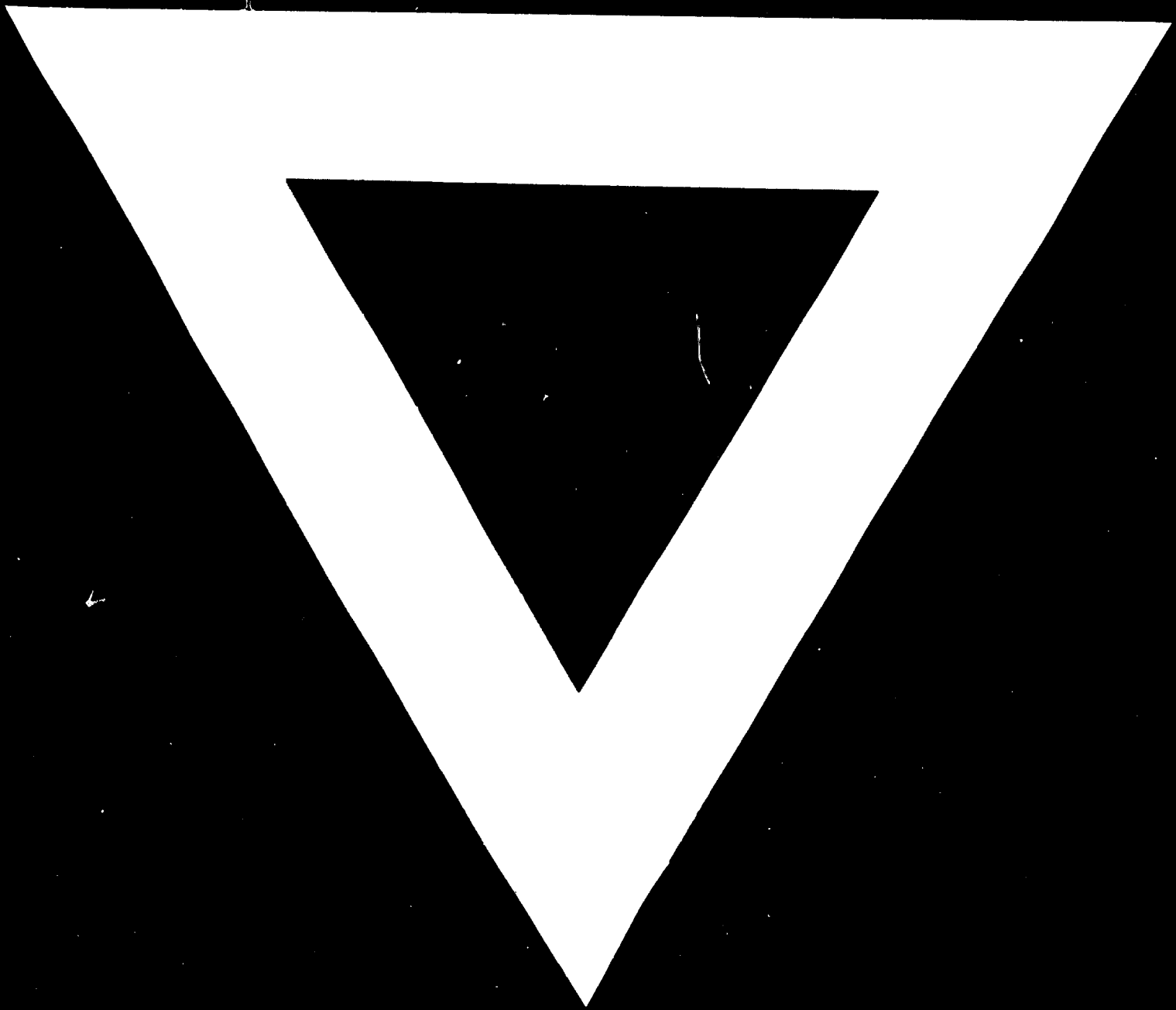
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