Notes & News

EXTRACT FROM ANNUAL REPORT OF THE REGISTRAR OF NEWSPAPERS FOR INDIA 1961 PART—1 PAGE NO. 165

ENGINEERING AND TECHNOLOGY.

Journals of engineering and technology are mostly published in English. In fact, there are only six out of the 64 journals in this category which are published in Indian Languages.

Increasing accent on specialisation is a feature of the growth of this type of journals in recent years. They now cover different branches of engineering and technology, including power, river valley projects, locomotives, architecture, machinery and machine tools, fuel, tele-communication, electroplating and engineering.

The most widely circulated journal in this category is the " Journal of the Institution of Engineers," which has a circulation of 33,655. Most of the journals in this category, however, have a limited circulation, not exceeding 1,000 copies per issue. The oldest among them is the " Journal tific and Industrial Research from Delhi since 1942. It claims a circulation of 1,598.

Among other leading journals in this category are: " Quarterly Journal of Geological Mining and Metalurgical Society of India " established in 1924 and the " Journal of the Association of Engineers " established in 1925.

N.R.P.R.A. SILVER JUBILEE CONFERENCE

The Natural Rubber Producers' Research Association is celebrating its Silver Jubilee with a scientific conference to be held in Cambridge from 7th—9th April this year. Some 200 leading representatives of industry, research associations and universities have been invited.

Accommodation will be provided in St. John's College, the Conference headquarters, and lectures and discussions will take place in the Cambridge Union Building.

The Chairman of the Conference is Dr. L. Bateman, Controller of Rubber Research for the Malayan Rubber Fund Board.

The programme consists of plenary lectures by Sir Harry Melville, Professor Herman Mark and Professor James Bonner and two discussion

synposia (A) and (B) running paralellel entitled:—(A) " Ultrastructure and Metabolism of Hevea Latter ", and (B) " Chemical Structure and Mechanical Properties of Vulcanized Rubber."

Chairman of symposia sessions are:—(A) Professor G. F. Blackman, Professor J. Bonner, Professor G. W. Goodwin, and (B) Dr. L. R. G. Treloar, Sir Eric Rideal and Professor G. Gee. Eleven lectures at the symposia will be delivered by members of the scientific staff of the N.R.P.R.A.

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INDIAN RAILWAY ELECTRIFICATION.

The Indian Railway Board has awarded a British firm a contract valued at more than £250,000 for the supply and installation of 39 feeding/switching stations for the 25-flV A.C. electrification of the Northern Railway between Mughalsarai and Kanpur—part of the main line between Delhi, the capital, and Calcutta. This is the tenth contract awarded to that firm since Indian Railways initiated their 25-kV, 50 c.p.s. A.C. electrification programme in 1958. The contracts have been worth over £8-million and have covered the overhead electrification of nearly 1500 track miles (2400 km).

Earlier this year the company were awarded three contracts, worth nearly £2½ m. for the supply and installation of overhead equipment for 410 track miles (660 km) on three of India's railways. This work comprises 240 track miles (386 km) on the main Delhi-Calcutta line, 145 track miles (233 km) on the line between Saktigargh and Dum Dum which carries freight and mineral traffic between Calcutta and the North Bengal coalfields, and 24 track miles (40 km) to the west of Calcutta, which will facilitate the transport of raw materials to the large steel plants in bihar State.

India will have 2000 route miles (3200 km) of electrified track by 1966, the end of the current five-year plan. 25-kV overhead A.C. equipment is being used for all newly electrified track; and some older D.C. installations, including an 88-mile (142 km) 3000-volt section near Calcutta which was completed as recently as 1958. will be converted to this system. Another firm has been commissioned to convert some of the existing D.C. multiple-unit equipment for optional A.C. or D.C. use during the change-over.

Technical Terminology :

One of the problems continually confronting technologists, scientists and others in industry who must communicate with one another is the need to agree on standard terminology—so that all concerned can speak the same technical language. Help towards this end now comes in a new British Standards Institution (Park Street, London W.1.) publication " Recommendations for the selection, formation and definition of technical terms."

Much has already been done through BSI glossaries of terms (of which there are now 80 in print and many more in production) to provide individual industries and technologies with their own, agreed standard language. Even so, the approach may often vary from industry to industry.

Internationally, the International Organization for Standardisation is preparing recommendations on the principles to be followed by all industries in defining terms. The new British standard embodies some of these ISO recommendations, setting out the procedure which should be followed—watever the field—in establishing technical terms and in drafting their definitions.

Glass-Fibre Bus Bodies :

A new type of lightweight chassis-less bus, designed by British and Danish engineers, has won a £2½ million order for Leyland motors of Britain. The order is for 300 buses, which have lightweight aluminium and glass-fibre bodies instead of steel. The bus weighs less than seven tons and is claimed to be one of the lightest high capaciay buses in service anywhere

One-inch Diameter Motor :

A precision-made industrial electric motor, just one inch in diameter and just over two inches in length, has been produced to bridge the gap between expensive miniature servo motors and toy motors. Made by a British firm it is rated at one thousandth of a horse power. It weights 1.3 oz.

The firm say that the prototype was tested by the Royal Aircraft Establishment at Farnborough, and proved to have a life of some 300 hours before the brushes needed changing.

The motor has sintered bronze bearings and carbon brushes similar to those used in the more powerful ranges of motor. Torque is rated at

20 gm. cm. at 5,000 r.p.m., which is normal running speed. The current at 12V is 300 milliamps on load.

Models are available in one-and-a-half, six and 12 voltages. The bearings are self-oiling with ball bearing thrust.

Rubber Flooring :

A vulcanised sponge-backed rubber flooring, which provides a high degree of resistance to impacted sound, is now being produced in Britain. The new product consists of sponge and rubber " cured together " and vulcanised in one operation. The result is more successful than previous methods of sticking rubber and sponge together.

Not only will it absorb the sound of foot traffic in rooms above, but it will also help to deaden sound in busy offices and other places where quietness is needed.

The modern trend in multi-storey construction is for all floors between flats to be constructed so as to provide adequate resistance to the transmission of sound. By providing a rubber floor covering with sponge underlay, the material enables builders to meet this requirement.

The top surface is the same composition as normal rubber flooring, and the sponge is of a firm type sufficient to give the impression of walking on a soft floor but not too soft to cause trouble in laying. A linen interliner prevents stretching and buckling.

Hovercraft Test Track :

A test rig has been built by Britain's Hovercraft Development group to provide some of the engineering information necessary for the development of of a tracked hovercraft, usually known as a Hovercar.

The rig will examine the properties of multi-pad hovercraft operating at high cushion pressures (about two to three times those of present hovercraft) and very low hover heights. It has at present only a very limited mobility but considerable information can be obtained by tests or even this short track.

The track form, of an inverted " T ", is one of many that could be used for a tracked hovercraft, and the information obtained will be applicable to different types of track. The layout of the rig is to perform the function of a test vehicle only.

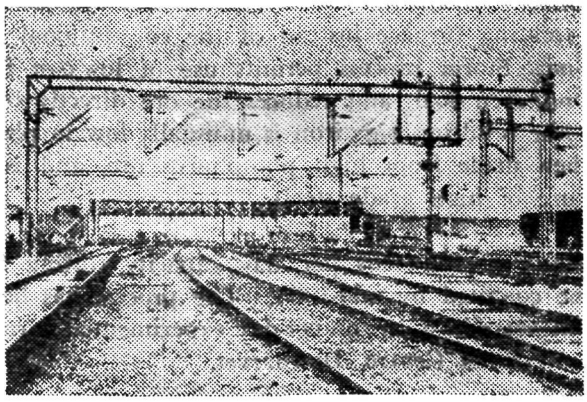
Rapid Building System with portable standardised factory for structural component production at site.

A new British building system just announced holds the promise of a 20-storey block of flats completed in 25 weeks—or in a third of the time required by traditional methods, and at considerably less cost.

The system, said to be extremely flexible both in planning and execution, covers the full range of housing from a single " bed-sitter " to a six person flat Its general principles are said to meet the need for rational planning of sites and buildings, standardisation of component parts, and mechanisation and planning of production techniques and erection programmes.

Under this system the site itself will become the focal point of structural component production in factories which are themselves standardised. They and their equipment can be rapidly set up and then dismantled for operation in another part of the country when the job is complete.

The casting of external concrete cladding blocks will vary from site to site, employing expendable moulds for small contracts and heavy permanent moulds for repeated use from one large contract to another. Each flat or group of flats to be built will consist of a number of repetitive types of unit with a planned sequence of operations, from casting to final position in the building, to a strict time-table.



Indian Railway Electrification
overhead equipment.

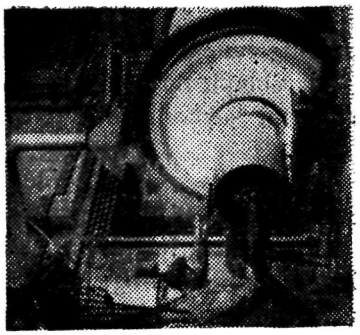


Figure 1—Experimental tests perfecting the new pig iron production method were carried out in this 13 ton-per-day rotary furnace at Stora Kopparbergs' metallurgical research center, Domnarvet, Sweden. Stora now plans to build a 130-ton-per-day pilot plant utilizing the new process.

New Pig Iron
Production Method Similar to Kaldo Process

A revolutionary method for producing pig iron directly from ore that offers significant economies and a higher grade product has been developed in Sweden by Stora Kopparbergs Bergslags AB, Falum, one of Scandinania's largest steelmakers.*

Using a rotating furnace instead of the conventional vertical blast furnace, the new Storm process permits use of low-cost fuels, such as coke breeze and even coal, and reduces the ore directly by the carbon in the fuel. The resulting pig iron is unusually low in phosphorus content, even when made from high phosphorus ore, and is suitable for the manufacture of high grade steels.

A pilot plant of 130 tons per day capacity costing $2,000,000, is expected to be compted by mid-1965. The process has been tested for the past several years in a 13 ton-per-day experimented furnace at Stora's Metallurgical Research Centre, Downarvet.

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* *Vide:* Iron & Steel Engineers, November 1963 for licensing arrangements.

In the new process, Stora uses a rotating furnace as in its Kaldo oxygen steelmaking process which was introduced in 1956 and now is in use in America. The furnace has one open end, into which the ore, the oxygen gas and the fuel are feed. As carbon monoxide gas develops in the center of the furnace, it burns with the oxygen. The combustion provides the heat required for the reaction of the iron ore with the powdered coke and is a vital part of both the new pig iron and the Kaldo processes. In both, the rotation of the furnace wall, continuously being cooled by the metal bath, effectively contributes to the heat transfer so that this energy is used in the process itself.

Capital costs for a furnace using the new Stora process are not more than half of those for a conventional blast furnace of the same capacity. Lower capital outlay, together with lower fuel costs, suit the process well to smaller steel plants and to those larger steel mills wishing to increase capacity without making a large capital outlay.

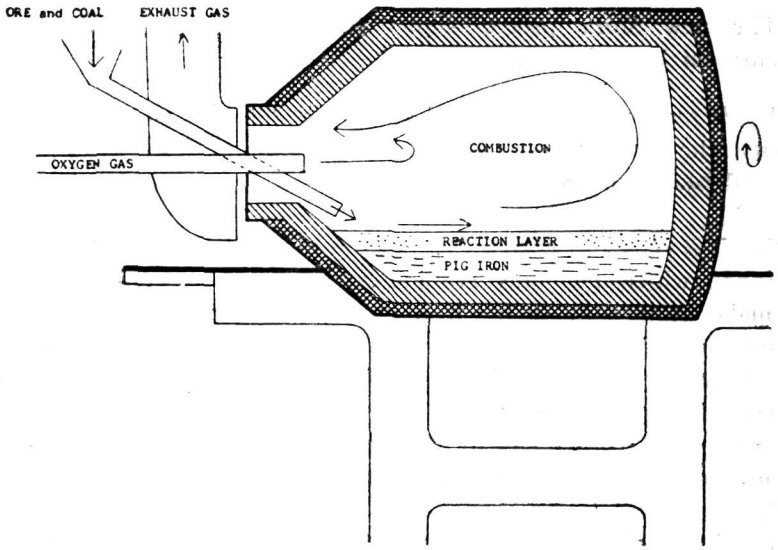


Figure 2—Pig iron and carbon monoxide are formed in the reaction layer while just above this layer the carbon monoxide is burned with oxygen. The heat of combustion is absorbed by the reaction layer, partly directly and partly via the rotattng furnace wall and through the molten pig iron. The process can be run continuously or it can be stopped and started with ease.

Licensing arrangements for the Stora process in the United States and Canada will be handled through Stora. Kopparberg Corp., New York.

The reduced product, which collects at the bottom of the furnace just below the reaction layer, has the same carbon content as normal

uig iron but a phosphorus content as low as 0.02 per cent event when phosphorus-rich ores are used. No other reduction process is able to produce low phosphorus pig iron from phosphorus-containing ores, Silicon and manganese also remain in the slag so that percentages of these elements in the hot metal are very low. Because the Stora process produces a virgin pig iron, free of impurities, it is well suited for making high grade steel by oxygen or other steelmaking processes.

The process can be run continuously or it can be stopped and started with ease, giving the user flexibility in his operations. Metal and slag are tapped at regular intervals when the process is run continously. It is stable and, with a short process time, easy to regulate. Feeding can be done automatically, rising the prospect of complete automation in the future. Under optimum conditions, 800 to 1000 lb. of coke and 10,000 to 13,000 cu. ft. of oxygen are used per ton of pig iron produced.

The new Stora process shows these significant advantages over conventional blast furnace processes:

1. *It requires a lower capital investment*—For a plant of equal capacity, the new process costs not more than half as much as a conventional blast furnace.

2. *It is cheap to operate*—Iron ore concentrates need not be sintered (prefused), which not only eliminates the entire cost of sintering but also makes it possible to use iron ore concentrates unsuitable for sintering because of physical or chemical limitations. Fuel consumption is only about 80 per cent of that in blast furnace operation. Moreover, mechanical strength and lump size required for efficient blast furnace operatnon are eliminated, so that coke breeze and similar less costly carbon materials can be utilized.

3. *It is stable and easy to control*—Because of the short process time, the process is easy to regulate. It can be run continuously or stopped and started with ease.

4. *The product is purer*—Since neither phosphorus, silicon nor manganese have to be removed, the main costs of slag melting and treatment by the steelmaker are eliminated. After desulphurizing, the iron is highly suitable for manufacture of steel.

The four variations of galvanized strip are produced in the Selas furnace, single or multi-purpose, as follows:

Multi-purpose Furnace for Galvanized Steel.

Soft Galvanized Strip for Deep Drawing

Clean, batch-annealed strip is preheated to a selected temperature, and then passes through delivery duct ready for immediate immersion in zinc bath.

In-Line Annealed Strip for Intermediate Drawing

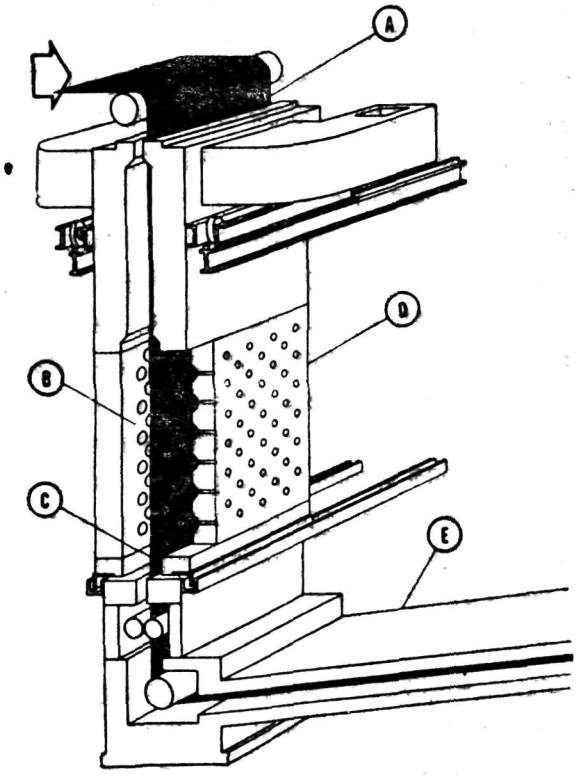
Hard strip is heated to annealing temperature, and then passes through delivery duct where it is cooled to desired exit temperature.

Hard Strip for Light Drawing

Hard strip is preheated to selected temperature which is maintained or lowered, as required, in the delivery duct.

In-Line Normalized Strip for Deep Drawing

Hard strip is heated to normalizing temperature, and then passes through duct where it is cooled to desired exit temperature.



Vide : Iron and Steel Engineer, November 1963 for Producesr's name.