
CURRENT SCIENCE—50 YEARS AGO

THE INDIAN CHEMICAL INDUSTRY*

THE ten weeks since the declaration of the War, have been witnessing a steady inflation in the price of drugs and chemicals in this country. The manufacturing industries whose maintenance is largely dependent upon the import of foreign accessories and raw materials, have already begun to feel the pinch of a diminishing supply of their essential needs. The Conference of Chemical Manufacturers held recently at Calcutta, under the auspices of the Indian Chemical Manufacturers' Association has focussed the attention of the public on the imminent shortage of drugs and chemicals in India. The country has now become painfully conscious of its large dependence upon foreign sources for its supply of the principal drugs and chemicals.

The country was confronted with a similar crisis twenty-five years ago, during the Great War of 1914–18. Since then, the Indian Chemical Industry has made some progress; the pharmaceutical industry, for instance, has been trying to establish itself and has survived keen foreign competition; small nuclei of heavy chemical industry which now exist in the country, are manufacturing sulphuric acid; one or two works for the manufacture of alkali, are also under active consideration. But these could satisfy only a small fraction of the growing needs of the country. At the moment, India consumes, annually, about five crores rupees worth of drugs and chemicals, of which at least seventy-five per cent is imported from abroad.

The Chemical Industries in India group themselves into three main classes:—(1) Those which are in the process of establishing themselves on a fairly firm foundation, (2) those which are yet in their infancy and which, on that account, require careful protection and consolidation and (3) those which await exploitation. The pharmaceutical industry which falls under the first group, is in immediate need of rapid expansion to satisfy the increased demand caused by the total stoppage or partial curtailment of imports. The development of this industry, which is urgent, could have been easily secured, if we were not obliged to depend upon foreign sources even for some of the basic raw materials. The textile industry

is faced with a similar situation because of the rapidly diminishing supplies of wetting, bleaching and dyeing materials.

Many of the industrial enterprises now flourishing in the country can continue to function only if an unrestricted supply of the imported raw materials and spares of manufacturing machinery is ensured. It would be difficult to point out one single chemical industry in this country which can be considered self-sufficient and which will not be more or less crippled for want of foreign supplies. This unhappy state of affairs is the natural consequence of the policy of wholesale transplantation of industries which the country has been adopting in the past. There have been several instances in which even erecting engineers and technical experts have been imported to run the industry. The adoption of such a policy was no doubt necessary at a time when the industries were still undeveloped. Very few of the industries can claim to have originated through our own creative effort, which has yet to play its part in the future development of industries.

It may be said that the country is now on the threshold of the second stage when the creative faculty, latent in the country, should be stimulated and mobilised for the promotion of industrial advancement. This is not going to be an easy task for a country which has so far lacked competent, disinterested and broad-minded leadership in this field of national economy.

The next phase of industrial development in this country should consist in the consolidation of the existing industries; they should be rendered less and less dependent upon foreign imports. Subsidiary industries helping to produce accessories and intermediates should be organised. The possibility of utilising substitutes of Indian origin should be intensively and systematically explored. In the domain of pharmaceuticals, for example, it would be easy to find substitutes, perhaps more efficacious, but the industry is yoked under a highly conservative British Pharmacopoeia. It is for the *Indian Medical Research Council* to take up this matter and examine the situation.

The designing and fabrication of chemical plant and machinery leading to the establishment of

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chemical engineering industries in the country, should be immediately taken up for serious consideration. The country possesses the necessary equipment and talent; we have large foundries and machine shops and skilled and capable workmanship is available. We may be lacking in some of the specialised materials of construction like stainless steels and special alloys, but we could, for the moment, do without them. It is a matter of profound regret that the Central Government could not see their way to subsidise Sir M. Visvesvaraya's scheme for founding an automobile industry in this country, as this would have facilitated the establishment of the chemical engineering industries by providing the necessary background. The present opportunity should not be lost in laying the foundations of this industry on sound lines.

The Government of India have suggested that Indian Manufacturers might prepare a consolidated statement of their requirements of heavy chemicals and obtain them through Messrs. Imperial Chemical Industries, who are in close touch with the world markets with regard to these commodities. While this arrangement will provide a temporary and easy solution to the problem, this remedy will, in the long run, prove worse than the disease, as it will only serve to perpetuate our dependence on foreign

supplies to nourish our industries. The Central Government should take a broader and more generous view of the problem and help the establishment of these key industries in the country. Such a step would be in the best interests not only of India, but also of the Empire. The industrial prosperity of Canada, Australia and other Dominions, has proved to be a source of great strength to Britain in the present crisis; flourishing chemical and engineering industries in India would, in a similar manner, constitute great assets to Britain in war as well as in peace.

It is for the Central and Provincial Governments to move in the matter of organising and mobilising the material resources and technical talent and help the country to enter on the second phase of industrial development. It would be a grievous mistake if the Government should lose this opportunity. A Board of Scientific and Industrial Research or a National Research Council should be constituted to deal with all the aspects of the problem. The Industrial Research Bureau which is now miserably staffed and financially starved, may be reconstituted into a bigger and more comprehensive body and provided with ample funds to finance schemes of industrial research.

ALCOHOL AS MOTOR FUEL*

Now that a beginning is being made in India in the use of alcohol for mixing with petrol as fuel in motor vehicles, trials conducted elsewhere on the suitability of such mixtures should be both valuable and interesting. The report of an elaborate trial with alcohol used nearly straight and in mixtures of varying proportions with petrol for driving a motor car appears in the *Philippine Agriculturist* 28, No. 2 (A. L. Teodoro, Fifty thousand kilometres on alcohol as motor fuel). The trials relate to two groups, one comprising the use of nearly straight alcohol (gasoline being only 3% and 5%) and the other comprising mixtures in which the gasoline was 10, 30, 50, 70, 80 and 90%. The car used in the trials was a De Soto De Luxe Sedan (1929 model) which had run on gasoline for four years during which a distance of 10,678 miles had been driven. Slight alterations were made to the car before the trials

such as, enlarging the diameter of the high speed metering jet, and of the area of the pump discharge jet; ignition timing was set 5 to 14 degrees ahead of the usual adjustment for gasoline, and idling adjustment was changed according to the kind of alcohol motor fuel used. Details of the behaviour of the engine in respect of starting, acceleration, power, engine wear, corrosion and economy of operation are given in full. Likewise for each one of the fuels used particulars under working conditions and of the number of miles driven are also given, with full numerical data, for all of which reference to the full report is commended. As the result of these trials in which quite 50,000 kilometres were run it is concluded that the car performed very satisfactorily on these alcohol fuels for a period of five years. No difficulty was encountered in starting except when the engine carburetion and ignition systems were faulty and when the driver improperly used the choke. As much power as could be produced with

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