RESEARCH IN RELATION TO THE DEVELOPMENT OF THE PHARMACEUTICAL INDUSTRY

IN the course of his inspiring address to the Indian Pharmaceutical Congress Association held at Calcutta during the last week of December 1950, Sir J. C. Ghosh, Director, Indian Institute of Technology, Kharagpur, recalled the great and pioneering work of Acharya Ray, which helped to forge the closest links between chemistry and pharmacy. He said: "All knowledge is one, specially when that knowledge is dedicated to the common task of improving the health of our people and curing the diseases so frightfully prevalent in this country. May the members of this Congress and all those who are gathered here today, dedicate themselves, and not their knowledge alone to the great task!

"We are living at the dawn of a new era. We must strive hard that this dawn does not fade into darkness again, but break into a bright day of better life. Public health is one of the several sectors of national life—perhaps the most important one—in which this battle has to be fought and won" through a planned and concerted mobilisation of pharmacists, medical men, chemists and their sympathisers in other allied professions.

The Rank and File Make an Organisation

Sir J. C. Ghosh went on: "Contrary to the view held in some quarters in this country, I believe that a few men at the top cannot make a great organisation. An association ultimately becomes what its rank and file make of it. You have therefore to be very alert about the quality of men who enter your profession. Their professional ethics must be high. Wherever you notice that temptations of commercialism overwhelm character and suppress the ideals of service, you have to take stern action. Things being what they are in India today, disciplinary action against members who bring discredit to your profession, should be, for you, a subject of serious consideration. Your rank and file should not only have high professional ethics but also high professional competence."

Knowledge is Power

Proceeding with his address he declared, "Knowledge is power, but to be really effective, this knowledge must be up-to-date. However keen the struggle for existence may be, a member of your association will not be true to his profession if he does not keep his knowledge up-to-date. We have been for long accustomed in this country to medication in the form of compounded dosage of drugs. But in the progressive parts of the world, this kind of medication is rapidly falling into disuse. Glandular products, antibiotics and, above all, single chemicals, either obtained synthetically or derived from plant and animal sources, are being used more and more as specific remedies for diseases. In Calcutta, one cannot recall too often the great work which Dr. Brahmachari did in stamping out *kalazar* by the use of Urea-Stibamine as a specific remedy. Politicians may disagree, but this single discovery is doing more to bring prosperity to Assam than all other schemes of national reconstruction in that region put together. And mind you, this discovery was made in a laboratory and a hospital which could, by no stretch of imagination, offer reasonable facilities for research. Where there is will to conquer, adverse circumstances may slow down progress, but cannot be an effective deterrent.

Cross-Fertilisation of Ideas

Fortunately we have in India today many public institutions far better equipped for researches on drugs than Brahmachari's laboratory in the Old Campbell Medical School. You know, far better than I do, the beneficent activities in which they are engaged. I have always felt and pleaded that drug enquiry should not remain the exclusive responsibility of medical institutions. Here is a border region, where cross-fertilisation of ideas from the sciences of physiology, bacteriology, bio-chemistry and organic chemistry may bear wonderful fruit. Accordingly, in the Indian Institute of Science, one such unit of drug enquiry was started based on the collaboration of workers in the allied sciences. Similar centres are also being developed elsewhere. I hope that these centres will in due course, fulfil the expectations of their sponsors.

The Penicillin Project

It is fortunate that the National Government is keenly alive to their responsibilities for developing this branch of research. You will be interested to learn that Dr. Jivraj Mehta and General Sokhey have recently been able to pilot through the Ministries of the Governments of Bombay and India a scheme for the commercial manufacture of penicillin and allied drugs. The projects will be executed with the technical collaboration of a firm of Swedish Consultants at an approximate cost of about 4 crores of rupees, which will be shared equally by the two Governments concerned. One of the commendable features of the project is the emphasis that is laid on researches on anti-

biotics and the continuous quest for newer and better drugs in this field.

Self-Sufficiency in Drugs

The Council of Scientific and Industrial Research, under the leadership of Dr. Bhatnagar have set up a Central Drug Research Institute at Lucknow. As is usual with Dr. Bhatnagar, this institute is being planned to be one of the best of its kind.

He emphasised the urgent need of a rapid expansion of the industry, specially in the field of synthetic drugs and anitibiotics, so that *we may attain self-sufficiency in a decade.*

This object can be achieved, if the industry receives (*a*) the patronage of the consuming public, (b) generous support from the State and (*c*) if the management have the vision to recognise that research is in this, more than in any other field, the elixir of life of industry.

Research not a Luxury but an Essential Requisite for Progress

There is a school of thought in this country whose advocates do not believe that scientific and technical research is necessary for the industrial development of the country. They consider that all that is needed is to decide on general grounds if the country has the potential resources in power, raw material and transport, which will justify the establishment of any particular industry, and then import into the country the necessary machinery and experts for the purpose. Wherever necessary they would enter into an agreement for technical assistance with a foreign concern and secure the right to use their patents and access to their 'know-how' on payment of big royalties and fabulous fees. They are in favour of providing such technical education in the country which will enable the industry to be run by indigenous talent after a period of probation under foreign experts. They would strongly support technical and vocational education, but stop at research as being more in the nature of a luxury. I have often met this attitude in our powerful industrial magnates and entrepreneures in business. To them the history of the dyestuffs industry should be an object lesson. The first synthetic dye was made in England by Perkin, but the industry soon found a congenial home in German soil. In Germany the practical outlook of businessman is, more often than anywhere else, enthused by that faith in scientific research which comes from first-hand knowledge. Thus, twenty long years of painstaking research were necessary at a cost of more than a crore of rupees before Bayer's process for the synthesis of indigo could be commercialised. But once it was done, the fate of the natural indigo of Bihar was sealed and it disappeared from the world's market in another twenty years. The attitude in Great Britain, on the other hand, was one of complacent 'wait and see'; and the result was that in 1914 she had no dyestuffs industry of any importance. As the war progressed it was realised that the British dependence on Germany for dyes was a fatal mistake. Modern war depends for its successful prosecution on an abundant supply of a large variety of chemicals; and a dyestuffs and fine chemicals industry must be considered an integral part of every defence programme. The British Government took immediate and far-reaching steps. Beginning with a direct and large subsidy for the formation of a company, which ultimately was absorbed in the Imperial Chemical Industries, millions of pounds were spent on developmental research in every branch of the industry. Later on, the importation of dyes and even intermediates were prohibited. As a result, Sir Gilbert Morgan in 1939 claimed with justifiable pride that of the five most fundamental discoveries in dyestuffs chemistry since 1921, the world owed three to British talent. The Imperial Chemical Industries are not only producing now their home requirements but have also in addition a considerable export trade. They have also become pioneers in research on insecticides and anti-malarials. Their gammaxene is now contesting the pride of place with D.D.T. as the most effective insecticide. Their paludrine is now considered the most potent of all anti-malarial drugs. This altered attitude in Great Britain is reflected in the Ormsby Gore Report which observes that "no nation can advantageously depend only on the efforts of other nations for the purpose of promotion of knowledge. This is not only because such dependence is an ignoble parasitism, but also because in the field of international relations no less than in natioal life, the power that comes from kowledge comes from its early and rapid use and from close contact with men who have created this knowledge. The conviction has now become universal that the nation, which will enjoy the benefits of science in the day-to-day progress of its industries and agriculture, is the nation which habitually applied to them scientific method and scientific knowledge; and it is that nation which will be able to seize the advantage of the more spectacular achievements of science in its economic life."