

# Current Science



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## CENTRAL LEATHER RESEARCH INSTITUTE\*

THE idea of having this Institute at Madras was conceived as far back as in 1945, but for various reasons beyond our control it could not take a concrete shape earlier. In recognition of the great importance of leather industry in this country and with a view to furthering the study of and research in leather technology the Council of Scientific and Industrial Research has been making a block grant of Rs. 60,000 a year to the University of Madras, so that they could run a centre of leather research and technology in the University, which may ultimately develop into a full-fledged Research Association Laboratory. In a national endeavour of this nature, it is through the willing co-operation of one and all that success could be achieved. In our effort to establish this Institute, we have had the sympathy and support of the National Government at the Centre, the Government of Madras, the commercial community of India interested in leather trade and industry and the University of Madras. I wish

to take this opportunity for thanking Shri C. Rajagopalachari, Shri T. Prakasam, Shri O. P. Ramaswamy Reddiar and Sir A. Lakshmanaswamy Mudaliar, for the invaluable help they have given us. The Government of Madras have promised to place at our disposal free of cost a site measuring about 200 acres and also to bear a part of the recurring expenditure of the proposed Institute. The industry has also promised to make contributions towards capital as well as recurring expenditure but the brunt of the burden will be borne by the Central Government through the Council of Scientific and Industrial Research.

The leather industry plays an important role in India's national economy. India has the largest herds of cattle in the world—about 180,000,000 cows and oxen, 50,000,000 buffaloes, 46,000,000 sheep, 58,000,000 goats and 12,000,000 of other kinds; and her estimated leather production which include 20 million cow hides, 5.7 million buffalo hides, 27.5 million goat skins and 17 million sheep skins, ranks the highest. The Indian Hides Cess Committee has valued the nation's normal production of raw leather at about 19 crore rupees with a present value, about twice this. Hides and skins, raw as well as tanned, form a big item in

\* Extracts from a speech delivered at Madras by Sir Shanti Swarup Bhatnagar, Director, Scientific and Industrial Research, while requesting the Hon'ble Dr. Shyama Prasad Mookerji to lay the foundation-stone for the building of the Central Leather Research Institute on April 24, 1948.



India's export trade. As a result of partition approximately one-sixth of the bovine population and one-eighth of the goats and sheep are included in Pakistan area. The production of hides and skins will also be reduced roughly in the same ratio.

The province of Madras occupies a singular position in India's leather industry. Twenty per cent. of the cows, 25 per cent. of the buffaloes, 25 per cent. of the goats and more than half the total number of sheep in the whole of India are reckoned to be in this province. Madras is also rich in vegetable tanning materials such as *Tarwar* or *Avaram*, *Amalatas*, *Babul myrobolans*, *Mangroves*, *Divi divi*, etc. Recently wattle cultivation has also been introduced with good success, though it is not yet sufficient to meet the demand. The skill of the Madras tanner is world renowned, and the preparation of half-tanned hides is a unique speciality of his province. Ninety-five per cent. of hides and 85 per cent. of skins exported from India are sent out from Madras.

#### NEED FOR A LEATHER RESEARCH INSTITUTE IN INDIA

The Indian leather industry is still characterised by the two chief attributes of its past great tradition: (1) it has essentially remained a decentralised cottage industry in spite of the few big organised tanneries, and (2) it has continued to be a craft based more on empirical knowledge than on modern scientific methods.

We live in an age of science, and the modern leather industry owes a great deal to science; scientific methods are being applied to it to an ever-increasing extent effecting continual progress in the techniques of production. To develop and maintain the Indian leather industry in the forefront of progress demands, in the face of world-wide competition, ready access to new discoveries in science which are the raw material of all new development. This being so, a national research effort adequate to produce these basic discoveries must be there.

The leather industry in the West during the last fifty years has taken tremendous strides in manufacturing techniques as well as in the science of leather, and this was possible only through extensive and organised research. India, being the largest source of hides and skins in the entire world, has a natural right to play a leading part in

this industry. All these years she was satisfied with merely exporting. It should now be realised that this is frittering away of national wealth. Research is said to be the handmaid of industrial progress, and in the case of the Indian leather industry advancement will be possible only through research.

Though there are at present leather trades institutes in the major provinces and States, they have primarily been training institutions for operator and foremen types of personnel for the leather industry and have not undertaken scientific research on a scale commensurate with the needs of the industry.

The Leather Research Committee of the Council of Scientific and Industrial Research, set up in 1944 at my suggestion, was the first attempt in this country to seriously examine the possibilities of planned and co-ordinated scientific research in leather manufacture, and on their recommendations the Council is financing leather research on a planned basis in several centres; the most important are the block grant of Rs. 60,000 per year to the Department of Leather Technology of the University of Madras and a grant for a five-year programme of work at the Bengal Tanning Institute, Calcutta. In order to develop the Leather Industry of India along modern lines and bring it on a level with the highly progressive leather industries of Europe and America this Committee recommended the early establishment of a Central Leather Research Institute.

#### LEATHER MANUFACTURERS' RESEARCH ASSOCIATION

The research-association idea is primarily to help the small firms; and the structure of the leather industry in India is such that a research association will benefit the entire industry. A research association is an organisation established under the Companies Act, for co-operative research by firms in an industry or a group of related industries. They appoint their own staff make their own arrangements for carrying out research and draw up their own programmes according to requirements with the advice of the Government organisation. The following privileges are enjoyed by the members of a research association: (1) they can obtain technical information within the scope of the research organisation; (2) they can



recommend specific subjects for research and, on approval by the Government Body of the Association, have them investigated without further cost to the firm. The results are available to all members; (3) they can use any patent on secret process with or without nominal payment; and (4) they can ask for a specific research to be undertaken for their benefit at cost price.

The formation of research associations for Indian industries was first recommended by the Industrial Research Planning Committee which was presided over by Sri R. K. Shanmukham Chetty. The immediate constitution of such a research association of leather manufacturers was also recommended by the Leather Research Committee.

The Council of Scientific and Industrial Research approved in principle the proposals for the Central Leather Research Institute and the Leather Manufacturers' Research Association and decided that the Institute and the Research Association should be located in the Madras Province which is most vitally interested in this industry. At the instance of Shri C. Rajagopalachari, the then President of the Council of Scientific and Industrial Research, I visited Madras and inspected various sites in the vicinity of the capital city for the situation of the Institute and in consultation with the Minister for Industries, Madras, and the Vice-Chancellor, University of Madras, selected one near the Engineering College, Guindy. The Government of Madras has made a very generous free offer of the site for the Institute. The intention is to make this Institute function as the laboratory of the Research Association.

#### SCOPE OF THE INSTITUTE

Hides and skins to be converted into leather have to go through the following general operations: soaking, liming, de-

liming, bating, pickling, tanning and finishing. These include a number of detailed operations making the whole process highly complicated. Each operation alters the skin physically as well as chemically; and chemical, bacterial and enzymic reactions, influenced by temperature, concentration, acidity or alkalinity, age of the liquors and period of treatment, play great part in these operations.

The chemistry of leather manufacture is so complex that in order to understand it one has to possess a good knowledge of chemistry, physics, bacteriology and physiology. Nowhere is the need for research so essential as it is in these complex processes, the full understanding of which still defies the scientist in spite of rapid advancements made during the last few years. The industry elsewhere has advanced rapidly by the application of scientific methods in controlling these processes, by introducing mechanised forms of production and by standardising the physical properties of leather required by the consumer by means of approved physical tests. Revolutionary changes have been introduced in the use of materials in liming, bating, tanning, dyeing, fat liquoring and other processes. Equipment and machines have been developed for operations such as unhairing, fleshing, scudding, drying and finishing.

Research as applied to the leather industry may be classified under the headings: (i) basic or fundamental research; (ii) applied research; and (iii) development research including pilot plant work.

The Indian leather industry has many pressing problems, big and small, upon which its future prosperity depends. Hitherto whatever progress was noticed it came from individual firms, but henceforth the Leather Research Institute will form the focus of all scientific activity of this industry.

#### HIS EXCELLENCY LORD MOUNTBATTEN, VISITOR, INDIAN INSTITUTE OF SCIENCE

ON Wednesday, the 28th April 1948, His Excellency Lord Louis Mountbatten, Governor-General of India, and Visitor of the Indian Institute of Science, accompanied by his daughter, spent about an hour in the premises of the Institute going round the several laboratories with Mr. E. V. Ganapathi Iyer, the Director.

Addressing the members of Staff and students of the Institute at the end of his visit, His Excellency referred to the importance of the work of the Institute for the scientific and industrial progress of the country and assured the members that the National Government were keen-

ly conscious of the potentialities of science as a powerful factor in the development of the country and had been extremely enlightened and liberal in financing the several expansion schemes sponsored by the Governing Council. He expressed the hope that the department of Aeronautical Engineering which was one of the new departments of the Institute and had special scope for work in collaboration with the Hindustan Aircraft Factory, would make valuable contributions to the development of the aircraft industry in India.