

"The goal of each department (agricultural and co-operative) should be aimed at by the study of economic problems, for the ultimate end of all such study was that some economic good should accrue to the people of India. It was therefore necessary to study rural economics and the Punjab would seem to be the only Province that had attempted this. There was an increasing tendency in the Universities to study local problems. Directors of Agriculture could make suggestions to students for enquiries during their holidays".

[An address delivered before the Indian Economic Association, Madras Section, in September 1923 and published here through their kind courtesy.]

The Viceroy—Lord Reading—on Cotton Trade Prospects.

It gives me the greatest pleasure to take part in this inaugural ceremony today for several reasons. In the first place I am enabled to express my high appreciation of the value of technological and other forms of research connected with cotton with which this ceremony is primarily concerned and, in addition, there is the wider subject of the activities of the Central Indian Cotton Committee and the general question of the cotton industry in India as a whole, in which I take the warmest interest and to some aspects of which I desire to draw the attention.

The Indian Central Cotton Committee lost no time after their formation in carrying out the recommendations of the Special Indian Cotton Committee of 1919 regarding the appointment of a technologist and the erection and equipment of laboratory and experimental weaving installation in which accurate tests can be made and correct judgments concerning the value of varieties of cotton sent for test can be reached. The spinning test represents the main avenue to all technological research in cotton and the experimental spinning plant erected here now enables the most satisfactory method of ascertaining the value of cotton by actual spinning test to be carried out under expert control. These tests will be supplemented by other scientific processes directed towards classifying the properties of various types of Indian cottons and these results will be correlated with the results from spinning tests. The properties of fibre and yarn are also to be investigated. For some of these processes a laboratory will be required where physical, chemical and microscopical examinations can be conducted. A building has been designed and begun for these purposes, but, meanwhile, thanks to the kindness of the trustees of the Victoria Jubilee Technical Institution, the actual laboratory tests have not had to wait upon the completion of the building and are already being carried out in the premises of the Institution. I need not emphasise

the great value of this work. Its effect in assisting in the selection of the most suitable varieties of cotton for growing and in placing facts before the producers and consumers of first importance in the marketing of cottons cannot be over-estimated. I heartily congratulate all those concerned in the successful start made in technological research work here and I also felicitate the public interested in cotton on the possession of an institution designed for scientific tests, which I am confident will be of the greatest value in the history of this most important industry.

WIDER ASPECTS OF THE PROBLEM.

It may appear to Bombay unnecessary to dwell upon the wider aspects of the work of which the experimental spinning plant is only a part, though a very important part, for Bombay is the great cotton centre. Not only does the Presidency grow large areas of cotton, but much of the prosperity of Bombay City itself is bound up with the cotton industry and large numbers of persons are directly concerned with the purchase, marketing and export of cotton and with the spinning and manufacture of cotton cloth and yarn. The question of cotton supply has accordingly a direct reaction on the general conditions of the financial, commercial and industrial prosperity of this city, but this lively interest is not universal outside Bombay and, perhaps in some quarters in India, men's minds are apt to dwell in some perplexity on the problems of financial stringency and of the needs for social, administrative and economic improvements of various kinds without realising, as keenly as I do and as many, I feel sure, in Bombay also do, that the cure for many of these difficulties and defects lies in increase and improvement of production. The effect of increased production in assisting directly and indirectly to State revenues and in enhancing the prosperity of the producer, the manufacturer and the industrial labourers will, I am confident, show the way of escape from many of those difficulties and problems for which at present no easy solution can be found. One of the more obvious means of improving production in India lies in concentration on the improvement of the cotton crop.

India is vitally interested in cotton. Many parts of the world can produce foodstuffs, but the favoured areas which have conditions suitable for the production of cotton lints for use for clothing and numerous other purposes are limited. India, however, has the priceless heritage of a climate and soil favourable for cotton production and it would be madness to neglect or squander that fair inheritance or to fail to use every effort to improve it by wise stewardship, India consumes a large quantity of cotton goods, it

has an extensive cotton export trade, it is keenly interested in the manufacture of goods both through well-established and efficient spinning mills in which much capital has been invested and which give employment to large numbers of workers and through widespread cottage industries which produce large quantities of hand-woven yarn and cloth. It must be remembered that India is not only the largest cotton producing country in the British Empire, but is also the second largest cotton producing country in the world. Moreover America, the largest producer, is itself now yearly subscribing to an increasing extent to its own produce. For this reason not only in the interests of India itself but in the interests of Empire supply and world supply, the cotton industry of India holds the most important position and India offers the greatest possibilities for a considerable increase in the supply of cotton in the near future.

INCREASED SUPPLY OF COTTON.

The possibilities of increase in India lie in various directions. There is the question of the expansion of the area under cotton which is largely connected with the extension and improvement of irrigation and the exploitation of new areas suitable for cotton cultivation. Another aspect of the case is the possibility of securing a better average yield per acre in the existing cotton areas by selection and stabilisation of the better varieties of cotton or by the introduction of new kinds. There is also the question of the prevention and cure of diseases and pests to which the crop is peculiarly liable and which cause a considerable volume of the loss of each year. There is also need to study the export and mill demand more closely and to aim at improvements in the production and marketing of the desired varieties in commercial demand for the cotton trade with the mills in India or other countries. This includes the prevention of adulteration, deterioration and admixture and the stabilisation of the supply of various types in demand in various markets. As an illustration of the great scope for improvement I may note that the Cotton Committee in 1919 stated in their report that the average yield of Indian cotton was only 85 pounds of lint to the acre as compared with 200 pounds in America and that there was, in addition, defective marketing resulting in losses for Indian cotton of 10 per cent more in the blow room as compared with American and Egyptian cottons. The Committee also found that before the war Lancashire, the best available cotton market, took little Indian cotton owing to the short supplies from India of staple cotton approximating the commercial inch standard.

The time at my disposal does not permit me to do more than indicate in the broadest manner the great importance of the field open to the labours of the work on which they are engaged and the

numerous problems, of which I have only enumerated a few salient points, remaining to be solved by their efforts and advice, but if in my brief sketch I have been able to communicate even in some degree the keen interest which I feel in their work and my deep appreciation of the importance of their labours in the interests of the progress of India and the prosperity and welfare of the people of India, I shall have been amply rewarded.

CENTRAL COTTON COMMITTEE.

The Central Indian Cotton Committee has been set up as a result of the report of the Special Cotton Committee of 1919. Broadly speaking, apart from formal activities, the Committee is a central body charged with the promotion of all measures which will tend to further the improvement of the cotton-growing industry in India. The personnel consists of a fully representative body including the Agricultural Adviser of the Government of India as President and as members, the Directors of Agriculture and other experts of the Agricultural Departments in the cotton growing provinces, the Director-General of Commercial Intelligence, the representatives of the Chambers of Commerce and commercial associations, commercial representatives specially nominated by the local Governments, representatives of the Co-operative Credit Societies of the cotton-growers and of the Indian States. The representative character of the committee specially qualifies it to advise the Central and Provincial Governments in all matters concerning the industry and affords a common ground on which all sections of the cotton trade, the producers, the traders, the manufacturers and the agricultural and other experts of the Central and Local Governments can meet and discuss difficulties and take joint action to promote objects which are alike the concern of the Government of India, the local Governments and the Indian States. With the passing of the Cotton Cess Act, the Cotton Transport Act and the active consideration of a bill for the regulation of gins and presses, the machinery for extending the operation of the Committee is in the process of being perfected. The Committee has already excellent achievements to its credit and great results are to be expected from the schemes of the Committee for the production of an agricultural and technological research. The Committee can rely on my warm sympathy and on the support of the Member of my Council, Sir Narasimha Sarma, in their operations and I know that the Ministers in charge of Agriculture in the cotton-growing provinces keep in very close touch with their work. I commend the work of the Committee to the public generally because I am convinced that it is of primary importance to the welfare of India and to the prosperity of her people. I will now proceed to perform the inaugural ceremonies.

The old year to the new.

" Alas ! Alas ! The span of life
Is filled with striving, stress and strife !
And when to love one would incline,
Impelled by thoughts on things divine,
The world intrudes and orders all
To honour every worldly call,
Enthroning self, enslaving truth,
Degrading Age, corrupting youth,
Until the Soul with anguish riven
Escapes, and wings its way to Heaven.

" But, stay, fair youth, the worst I have told,
Men cannot always worship gold.
For somewhere in the mind of man
Is laid the Great Creator's plan,
By which through years of toil and pain,
Man's better self will rule again,
Exalting Right, overthrowing wrong,
Each matin prayer a triumph song.
And when the theme swells forth in praise,

" I Will announce the promised days
Of Love and trust, of mirth and cheer
A never-ending glad New year.

RALPH FLEESH,
(*The Scottish Farmer.*)

Association between reaction times in the case of different senses.

BY PROF. KOGA AND G. M. MORANT,

The authors investigated the relative extent to which a short reaction time depends on the acuteness of the sense concerned and on mental briskness. With this end in view they measured (1) acuteness of hearing with Galton's whistle (2) acuteness of sight by the capability to read diamond type at regulated distances (3) reaction time to sound (4) reaction to sight, the last two were measured by Galton's simple pendulum chronograph (5) age. These deductions were arrived at from records of 3379 males.

Age and highest audible pitch. The correlation was negative and substantial, indicating that the power to appreciate high pitches decreases rapidly with age. The regression was sensibly skew.