

India is so large that there would never be enough alcohol to permit the admixture of a large alcohol percentage.

In order to make the mixing of alcohol with petrol commercially possible, the rectified spirit must be dehydrated. Committees have been appointed to study the possibilities of the manufacture of dehydrated rectified spirit or absolute alcohol and the required legislation for the exclusive use of petrol alcohol motor fuel. Mysore State has taken the lead and has now an absolute alcohol plant in operation, and legislation is expected to be passed early next year making the mixing of all petrol sold in the State with a certain percentage of absolute alcohol obligatory.

The maximum percentage is 25%, but when all molasses manufactured in Mysore State is distilled into Absolute Alcohol, not more than 16% of the petrol consumption will be available. Even a 20% mixture will not require any adjustments to petrol motors. In fact the alcohol-petrol mixture will be a fuel of higher octane, slower burning, therefore less liable to "pinking", give less carbon deposit and less carbon monoxide in the exhaust gases. Even when using 96° pure alcohol, there is no difficulty in India in starting from cold, so that the petrol-alcohol mixture will provide a better fuel than the low grade petrol now sold in

South India. If all waste molasses produced in India could be made into absolute alcohol, it would mean a large revenue to the sugar industry and an invaluable asset in case of war.

Other by-products of the factory are the surplus bagasse, but this is seldom available when "noble" canes are being cultivated. The best use of surplus bagasse is as fuel to run a distillery. Paper and Celotex manufactures are major industries requiring a huge capital outlay. Then we have the filter press mud, from which a kind of inferior wax can be obtained, but the best use is, in my opinion, to spread it on the fields, in order to correct bad soil conditions. We have also, ashes, which are useful for soil correction or can be used to fill insanitary holes. The fine ash dust we give to the Malaria Control Board, to mix with Paris green. The mixture is blown over stagnant water pools in order to kill the mosquito larvæ.

In closing, I would like to state that the Indian Sugar Industry has grown from a very promising infant to a well-grown youth, whose behaviour might be criticised, but who gives promise to grow into a mature and useful member of the Indian industry and who fully deserves the support and encouragement of its father, the Government of India.

Indian Central Jute Committee Technological Research Laboratories

THE laboratories were officially opened on January 3rd, 1939 by His Excellency the Viceroy, in presence of His Excellency Lord Brabourne. The foundations were dug in early February 1938 and the building and equipment were ready for the staff to go into occupation in early September.

The laboratories are situated in Regent Park, just outside the Tollygunge municipal area, about five miles south of Calcutta. The central block contains on the ground floor the Manager's office, jute godown and machine store, and on the first floor, the Director's office, general office and sample-room. The tower portion contains the main staircase and, on the second floor, the main water-tank. In the east wing there are three large, air-conditioned rooms which contain the spinning machinery, comprising a jute softener, teaser card, warp and weft breaker cards, warp and weft finisher cards, drawing frames, roving frame and spinning frames, all being of the most modern type. The machines are provided with individual electric motors, the drives being by V-ropes except in the case of the softener. A vary-pitch V-rope drive is fitted to one of the spinning frames. The drawing frames and the roving frames are each divided into two sections, one for the finer yarns and one for the coarser yarns. Each spinning frame has twenty spindles, one being for the finer yarns and one for the coarser yarns.

The spinning machinery has been provided with the object of enabling spinning trials to be made on small samples of fibre under controlled conditions.

The immediate objects of the investigations which are in progress are, firstly, to make reports on samples of fibre resulting from breeding trials, manurial experiments and the like and on any other samples which are sent for appraisalment such as samples taken from the various jute-growing areas in connection with the Committee's marketing investigations. Minor modifications are being made in the spinning machinery in order that reliable information may be obtained from quite small samples (say 20 to 160 lb.) and special precautions are taken to ensure that the yarn produced accurately represents the sample of fibre under test.

The second main object of the early work in the laboratories is to find out what connections there may be between the various measurable characters, whether physical or chemical, of the raw fibre, its behaviour in spinning and the quality of the yarn produced. When this object is achieved it will be possible, by examining a representative sample of fibre, to predict its spinning quality and so to assess accurately its value. It may ultimately be possible to devise simple tests suitable for use in markets and baling houses.

The air-conditioning plant, which has been installed so that all tests may be made under standard conditions of temperature and humidity (80° F. and 75 per cent. Relative Humidity), is housed in the west wing of the buildings. This wing contains also the boiler, transformer and the tube-well pump. An open space has been left between the central block and the west wing in order to allow the south breeze to reach the range of the laboratories (chemical, physical and testing) situated along the north side.

The chemistry laboratories are well equipped for carrying out the analysis of fibre samples in order to find out the proportions of the more important constituents (cellulose, lignin, pectin, etc.) and for the determination of other characters which may be expected to show a correlation with spinning quality. Town's gas

for example, it has been found necessary to take the mean of at least three hundred tests. This gives a twenty-to-one chance that a difference of six ounces between the tensile strength of two yarns with a strength of about 10 lb. is a real difference. Similarly, in measuring the twist (turns per inch) of a yarn, the mean of one hundred tests is taken.

In the larger testing laboratory there is an electrically heated "moisture oven" of the latest type for determining the moisture content of samples. The checking of the moisture content of fibre is important for at least two reasons. If the moisture content is unduly high, the fibre is liable to deteriorate in storage, owing to bacterial action and further, a high moisture content means that water is being bought and sold instead of fibre. On the first floor, over the testing laboratories, there is a roomy library.



is not available and a petrol-air gas plant has, therefore, been installed to supply the laboratories. A considerable portion of the apparatus is electrically heated.

The main work of the physical laboratories is to devise and perfect methods of measuring the properties, such as strength, fineness and flexibility, which are likely to be connected with the spinning quality of fibre.

Two testing laboratories have been provided and in both the standard conditions of temperature and humidity are maintained. In the smaller room there are instruments for measuring the tensile strength of yarn. The larger testing laboratory contains instruments for measuring the strength, fineness and flexibility of fibre and further instruments for the testing of yarns, including a "ballistic" yarn tester.

In all the tests statistical methods are in use for assessing the reliability of the results. In single thread tensile strength tests on yarns,

A representative range of scientific and technical journals is being taken in regularly and back numbers of several important journals have been obtained. The nucleus of what is hoped will develop into a valuable collection of text-books bearing directly or indirectly on the jute industry, has been collected. A classification suitable for a specialist library relating to jute has been worked out and the indexing of articles and information relating to jute has been commenced.

In a separate building to the south of the main block, workshops have been erected in which work required in connection with the spinning laboratories may be done and instruments and apparatus required by the chemist and physicist may be constructed. On a terrace over the chemistry and physics laboratories, there is a space where further laboratories may be built to meet future requirements. Room for extensions is also available to the east of the spinning rooms and in the south portion of the compound.