

irresponsiveness of the root to continue to supply to the leaves results in difference of osmotic pressure. This is the argument of the physiologist. Treating host plants therefore not to do their function must therefore result in this physiological condition. If you cut the roots the sandal must produce the spike. Such things have been done but never was spike produced. In fact single trees were isolated, dug up all round, roots cut off and even a polished platform provided to cut off moisture. The tree of course did not show normal growth but never produced spike symptoms. Even stronger measures were adopted. Strong sulphuric acid was poured into the roots. The lantana bushes were destroyed ruthlessly. Even fire as a killing agency was tried. The trees after sometime put on new flesh but no spike was produced.

All these conclusively dealt the death blow to the physiological theory. I however still believe, convert as I am to the infactious theory, that physiological and ecological factors have something to do with the disease. If they do not cause the disease they are at least responsible as predisposing causes for the trees to take on infection. I am not also yet convinced of the efficacy of destroying wholesale valuable plantations to stop the spread of the disease. Because even after destroying the trees one is not quite sure that the infection may not yet spread. There is no point therefore in eradicating these trees. Until therefore more efficient methods of combating the disease are found my opinion is that it is unwise to cut off plantations. My own experience is that there is an equilibrium set up by nature itself and sooner or later the infected trees get naturally immunised. Statistics as far as I know do not warrant our destroying so much wood of commercial value.

Notes and Comments.

Universities and Applied Sciences. Though no one can deny the need for research in the fundamental and general problems of the sciences it must be accepted that the time has come for those responsible in carrying on scientific investigations such as Universities and Research Institutes to divert the lines of research as far as possible, from the time-honored beaten tracks of mere academic lines towards the utilitarian aspects of scientific research. So far most of the Universities, at any rate in India, have been arranging their research courses in such sciences as Botany, Zoology, Chemistry, etc., more along the aspects of pure science than along fields of the applied aspects of such sciences. It is needless to add that these are times when the mere academic pursuit of any pure science will not be of any great help to the immediate needs of the country; workers in different branches put their hands together, co-operate, and make the very best use of their scientific knowledge towards the urgent needs and the calls of the country. Specialisation in different branches is certainly essential and commendable but as the writer in 'Nature' put it 'Science is

so specialised to-day that workers in any one branch of science are liable to have their attention so concentrated upon their own particular subjects that they see little of the field around them and are unconcerned in its general activities or problems'. There must therefore be co-ordination in research and the latter should as far as possible be planned and carried out with the hope of getting some results which will prove of some material use to the country. It may not be possible to produce the desired results in all such cases, but a great deal depends upon the Universities and Research Institutes in the way they direct research in the various sciences. That the pure academic mentality of scientific workers has not as yet fully reformed may be seen from the attitude taken by the recent British Association meeting at York which in full session refused to adopt a resolution brought forward by one of the sections to the effect that "the Government invite the leading scientific institutions and societies to appoint in conference representatives to co-operate with them to formulate plans for dealing with the present problems facing the country!" Though this is disappointing it is high time that the scientific worker realises that he has to shoulder some of the responsibilities of citizens to meet the needs of the country and help towards its material welfare; especially is this the case in India and scientific workers all over the country will do well to bear this in mind.

A New Method of Producing White Sugar from Sugar Cane.

Recently what appears to be a revolution in the manufacture of white sugar from sugarcane was demonstrated by the Industries and Agricultural Departments at Singanallur. The cost of materials for the demonstration is being met by the Coimbatore District Agricultural Association. The process consists of crushing sugarcane in the ordinary method by a power-driven sugarcane mill with the aid of 12 H. P. Peter oil engine. The juice is then boiled in a special multiple open pan furnace of the Rhilkand Bell type consisting of five pans, the fuel used being the trash and crushed bagasse obtained from sugarcane. A solution obtained by crushing bendi stem and a solution got from *sajji* (alkaline earth) are being used as clarifying agents, just when the juice commences to boil. The scum on the surface is then removed with laddles. When the juice comes to a consistency above that known as '*thenpagu*' and just below that used for the manufacture of jaggery it is removed and led into earthen vessels where it is allowed to cool. This is called '*rab*', and is kept for a period varying from 7 to 10 days and then treated in a centrifugal machine for about 15 to 20 minutes when it is converted into white sugar. The centrifugal separates the molasses from the white sugar formed. The molasses are also alternatively mixed with cane juice in order to get jaggery which fetches a second-rate price. In this process as soon as all the molasses get down a little water is syringed in the white sugar inside the

centrifugal so that all further impurities might be driven out. The sugar is then dried and a quality of sugar known as 'burra' sugar in the bazaar is obtained. The operating cost appears to be very economical. The whole process involved appears to be within the means of an average ryot cultivating 15 to 20 acres annually. The furnace used was designed by Mr. Srivatsava, Sugar Technologist to the Imperial Council of Agricultural Research and the local departments of Agriculture and Industries are actively co-operating in these experiments. If such trials prove economically successful there is sure to be a great future for the Indian Sugar Industry.

M. Sc. Degree in Agriculture. We understand that the Madras University authorities are inclined to institute post graduate research courses for our agricultural graduates and offer the master's degree in Agriculture. This is certainly an incentive to young men working on different aspects of the agricultural sciences to earn distinction in their own special line of work. The arrangement proposed is that the candidate for the M. Sc. Degree should be an agricultural graduate of sufficient attainments and should after working under the supervision of a science expert recognised by the University for at least two years submit a thesis on some special agricultural subject which will be examined by experts appointed by the University. The institution of such a post graduate course will also help the Agricultural and Industrial Departments to select specially trained men for particular appointments under them instead of having to select from a number of graduates having the same general training but of doubtful value for special lines of work.

Recent Grants for Agricultural Research. The governing body of the Imperial Council of Agricultural Research at its meeting held on the 7th October, sanctioned a number of research schemes as recommended by its Advisory Board. The more important of those were (1) An application from the Madras University for a grant of Rs. 25,830 for research in the cytological study of Indian crop plants, (2) A scheme from the Indian Institute of Science for the preparation of cheap synthetic manure, (3) A scheme for the continuance of investigations regarding the different aspects of cereal rust problem, (4) A scheme from the Madras Government for research into the indigenous drugs of India and the application of Lt. Col. Chopra for a grant to carry on research in the systematic collection of medical plants, (5) An application from the Director, Imperial Institute of Agricultural Research, Pusa, for a grant to carry on research in the Genetics of sugarcane at Coimbatore, (6) A scheme for an economic enquiry into the cost of production of crops in the sugarcane and cotton tracts in India, (7) An application from the Government of the Nizam of Hyderabad for a grant of Rs. 59,383 for dry farming research, (8) An application from the Government of Mysore for a grant for

investigation of the Indian fish poisons, and (9) Provincial schemes of fruit research from Madras, Bombay, Bengal, United Provinces, the Punjab, Bihar and Orissa and Assam, as recommended by the Fruit Committee and the Advisory Board. We understand that all the various schemes submitted were considered chiefly on their merits and that in all a sum of Rs 104,000 was available for the new items exclusive of sugar schemes. We congratulate those who have succeeded in submitting useful items of research and succeeding in getting grants. We have no doubt that research on these schemes will prove of real benefit to the agricultural needs of the country.

A Train held up by Insects. It may be surprising to many of our readers to know that a railway train was actually held up for over an hour's time on the 21st of October by a horde of caterpillars which covered the railway track for over a mile's length near Uttamangalam on the Vriddachalam line (S. I. Ry.) It would appear that the caterpillars got crushed under the wheels of the running train and the permanent way was so much covered with the sticky and greasy remains of these creatures that the line had to be cleared with a gang of coolies and covered with showels of sand to allow the rolling stock to move along the rails. It was only a few months ago that we read of an account of a locust plague extending along a hundred mile line in East Africa when the help of the military had to be indented on for getting the tract clear of the pest. Educated agriculturists might have heard of such insects as army worms and swarming caterpillars which under favourable climatic and other conditions multiply remarkably and become a regular menace to human progress. In some parts of the world especially in the malarial tropics there goes on perpetually a regular fight between man and insects and the question is often asked Insects or Man? This incident is an example to show the importance of insect pests and the necessity for studying their habits and influence on human activities. This appears to be the first case of such a nature in India though in America the moving army worms and locusts have been known to block the highways occasionally.

Joint Meeting of Science Associations. The recent joint session during the 2nd week of October (7th & 8th) of three science associations *viz.* the Association of Economic Biologists, Coimbatore, the Madras Branch of the Indian Chemical Society and the All-India Society of Biological Chemists, is an indication of the modern trend of scientific research calling for more and more co-operation and mutual help from workers on different aspects of the various sciences. The numerous subjects which were dealt with which were chiefly biological and chemical problems were of very great general importance and the discussions that followed were of a very high order and very instructive to all. The discussion on the symposium on "Utilisation of

waste products" presided over by the Director of Agriculture deserves special mention; almost all the aspects of the possible utilisation of waste were dealt with by the local scientific workers and the visitor delegates and the President summed up the whole situation in a remarkably suitable speech. Another important subject that received special attention was the "Sandal spike disease" a discussion on which was opened by Mr. M. Sreenivasaya from Bangalore, who has been carrying on research on this problem for some years. This session was presided over by Rao Bahadur K. R. Venkataramana Ayyar, Conservator of Forests, Coimbatore, a very experienced forest officer who has had a good deal to do with the Sandal Forests of South India. The subject was dealt with in its various aspects both by the opener and the other botanists and zoologists interested in the problem and the President gave a very interesting resume of the subject including his own personal and long experience of the problem. In addition to these main discussions a joint session of the societies was held over which Dr. Gilbert Fowler, the well known biochemist, presided. Numerous papers were read during this meeting including those from workers at Coimbatore and Bangalore.

All the three associations especially the conveners have to be congratulated for bringing about just a joint session and giving opportunities for various scientific workers to meet together and discuss important problems. The benefits of such meetings are very substantial and we welcome such joint meetings as often as possible. We would at the same time urge on the departments or institutes to which the various workers belong to encourage such conferences and give them all facilities to attend and take part in such gatherings. Details of this joint conference may be found elsewhere in this issue.

Gleanings.

Inherited differences in Taste Reactions. It has recently been shown that individuals differ in their capacity for tasting certain substances and that these differences are inherited. The results of an experiment with phenylthio-carbamide, made at the New Orleans meeting of the American Association for the Advancement of Science, last December are recently published by Dr. A. F. Blakeslee and Dr. A. L. Fox (Jl. Heredity Vol. 23 No. 3). Of 2550 persons tested 65.5% tasted the substance as bitter, 28% found it tasteless while 2.3% found it sour and 4.2% reported another taste. Earlier tests of families had shown that the failure to taste is inherited as a simple Mendelian recessive. When both parents are non-tasters, all the children are the same. This was found to be the case in 39 children from such parents. Individuals also differ in the threshold of stimulation, some being able to detect the taste in a few drops of a 1/500,000 solution while some non-tasters require a hot saturated solution to perceive any taste at all. This substance which is bitter to most people, differs in dalcin, which is three hundred times sweeter than sugar, in that an atom of oxygen is replaced by sulphur. The related p-ethoxy-phenyl-thio-carbamide is identical in taste, but apparently gives a slightly weaker reaction. Similar fumar-proto-cetraric acid, a bitter constituent of certain lichens, distinguishing them from closely selected