

an advance on Perkin's findings. Perkin reported the presence of Gossypitrin as the main component, with small quantities of iso-quercitin. The present authors however find, that while the presence of gossypitrin as the main component is confirmed, a good amount of quercitin and small quantities of a new glycoside and of gossypetin, are also present in the pigments; the authors have employed for the alkali colour reactions, buffer solutions of varying pH values from 6.8 to 11.0 and these have served to bring out clearly the differences between the two substances gossypitrin and gossypetin, and therefore helped to establish the presence of both these different compounds in the pigments.

A detailed further report on the new glycoside—which is different from gossypitrin and quercimeritrin is promised and will be looked forward to with interest.

M. R. B.

**An analysis of the influence of season on photosynthesis in the tropics.** By B. N. Singh and K. Kumar. (*Proc. Ind. Acad. Sci.*, Vol. II, No. 5—Section B, pp. 437 to 457). The paper sets down the record of an extremely systematic investigation into the effect of season on the photosynthesis of radish leaves collected from plants, which to supply material right through the year, were planted at successive intervals of fifteen days. Some of the interesting information obtained from the experiments, may be classified under the following heads, which, in fact, represent the lines of attack of the problem.

(1) Variations in the intensity of assimilation in *different seasons*, under *one set* of external factors—(a temperature of 29°C, light 28650 M. C. and  $\text{Co}_2$  0.049 gm. per 100 c. c.). There is a decline in the photosynthetic rate, from cool January to the spring in March and from March to the midsummer in June, with the coming in of winter in October there is a rise in assimilation. (2) Seasonal assimilation under *varying sets* of environmental factors. It was again seen that there was a decline in intensity of assimilation during the summer months, but increased temperature between 29–37°C is efficient in increasing assimilatory activity during this period. An increase however of illumination and carbon dioxide concentration, is more effective in increasing assimilation, during winter than during summer months. (3) *Morphological and structural changes*. The radish plants undergo changes with the season, the height decreases, the weight of radishes diminishes (from 8 lb. to  $\frac{1}{4}$  lb.) and total leaf becomes less, as we pass from winter to summer. (4) *The chlorophyll content* runs paralleled to the assimilatory capacity and is highest during winter and lowest in summer.

In general, photosynthesis and plant vigour are more in evidence in winter, than during summer in spite of the increase of light and temperature during the latter period. It is also interesting to find that respiratory activity is very low during the summer months and the authors suggest that the leaves adapt their structure and function according to the intensity of the external factors present.

M. R. B.

## Gleanings.

**Giant Tobacco.** Tobacco plants as tall as trees are among the strange vegetation of the lower Andian country now being investigated by an expedition from the University of California, under Professor T. H. Goodspeed. One of the tremendous growths measured by Professor Goodspeed was sixty feet high. The expedition is engaged primarily in a search for wild relatives of the common cultivated tobaccos, to be used in hybridisation experiments. Seeds of many other plants, however are being collected. (*Sc. Supp.* Vol. 82, 21, 38, p. 7.)

**On the incidence of tuberculosis in the offspring of tuberculous parents.** In a total of 564 matings and 2480 offspring the proportionate incidence of tuberculosis among the offspring was found to be in the following ratios by mating types,



the incidence in the offspring from matings in which neither parent was tuberculous being taken as 1: Both parents tuberculous, 4.3; father tuberculous, mother not, 1.7; mother tuberculous, father not, 1.6; neither parent tuberculous, 1. These results suggest the inference that a person is, on the average, about four times as likely to have tuberculosis if both his parents had it than if neither parent had. Such analysis of the material as it has so far been possible to make fails to disclose any factor other than heredity playing an insignificant role in producing the observed differential distribution of offspring incidence of tuberculosis by mating types, in the present material. (*Science*—Vol. 82, No. 2136, page 840.)

**A Recipe to clean walls.** A French patent gives a composition of 455 parts of corn flour, 40 parts of copper sulphate and 5 parts of Alum mixed with boiling water, for use in cleaning dirty walls, paints etc. (*A. E. B. in Sc. Amer.* Sept. 1935, p. 152.)

**That garlic odour!** × × × × A lasting remedy for offensive breath and odours seems at hand. Even the long lingering odour of garlic yields to treatment devised by Dr. H. W. Hoggard and L. H. Greenbey of Yales Laboratory of Applied Physiology. The breath can be immediately and completely got rid of, by washing the teeth and tongue and rinsing the mouth with a solution of chloramine. The chlorine liberated in the mouth, reacts chemically with the essential oils and deodorises them. × × × ..... (*Sc Service—Sc. Am.* Sept. 1935.)

**Sugar Statistics** Sir T. Vijayaraghavacharyar gives the following interesting statistics as regards the benefits derived from the sugar industry:— Value of sugar made from cane in 1935, Rs. 12 50 lakhs. Out of this amount the price for cane is Rs. 600 lakhs; the charges for transport of canes Rs. 120 lakhs; wages of labourers Rs. 200 lakhs; and salaries of educated staff Rs. 50 lakhs. The Indian sugar industry provides employment for about 1500 graduates and scientific men, 7500 other educated staff and 200000 skilled and unskilled labourers. (*The Mysore Economic Journal* Vol. 22, No. 1, p. 33.)

**Self-imposed famine in India.** When a people's diet takes a vicious path of its own towards impoverishment, it causes a graver mischief than any act of cruelty inflicted by an alien power. Such has unfortunately been the case in our province. Rice has been our staple food from which we have for generations received a part of our health, strength, energy and intelligence. But curiously enough, especially among the upper class of our community, a fatal epidemic of foolishness has become prevalent which allows this principal foodstuff of ours to be depleted of its precious nourishing element. Rice mills are menacingly spreading fast extending throughout the province an unholy alliance with malaria and other flagbearers of death robbing the whole people of its vitality through a constant weakening of its nourishment. We not only boil away an essential amount of nutrition from our daily ration of rice but also use elaborate machinery to polish off its skin which contains its most vital gift.

This is a self-imposed form of famine deliberately welcomed by a people who had already been suffering from the scarcity of milk and that of ghee of a non-poisonous kind.

There had been, I am told, some proposal to check the progress of this fatal evil through the intervention of legislature. I am glad that it failed, for the people must not be treated like eternal babies carefully protected by its appointed nurses from its own utter silliness. It is only for ourselves to exercise our intelligence for choosing our food which must be wholesome and sustaining. It is for the people themselves to realize that in the long run it is not cheaper to substitute the callous force of machinery for the indigenous rice-huller, oil press and grind mill for crushing the wheat.



Physical vigour born of healthy meals is valuable, not only for itself but for its power of enhancing one's earning capacity. Then again, we have to take into account the immense importance of our rural economic life whose course has been cruelly obstructed by the iron monster robbing our village women of some of their natural means of livelihood and the labouring class of its right to gather its simple living out of the gleanings from the people's own green field of life. It has gone on for long, this tampering with the time-honoured irrigation of living, in this country causing large desert tracks of privation in our villages.

Would it be too much to expect a body of volunteers to form a league whose members should take a solemn vow to use *dhenki*-hulled rice for their meals not allowing its nourishment to be stupidly thrown away by wasteful cooking? Could they not realize that it is the perpetuation of a national calamity to which most of us are daily helping by instituting in our homes an insidious method of suicide? (Dr. Rabindranath Tagore in the *Harigan*.)

## AGRICULTURAL JOTTINGS

BY THE DEPARTMENT OF AGRICULTURE, MADRAS

1. **Cotton Strains.** Cotton, though occupying only 6.3% of the total cropped area, forms one of the important crops of this Presidency on account of Madras producing more long staple than any other part of India and also of the relatively high value got for the produce. It is mainly grown on the black soils.

There are five distinct tracts in this Province, each growing a commercial type entirely different from one another. The Department of Agriculture has opened farms in each of them and is making intensive studies for more than a decade with the object of improving the local varieties. As a result of these investigations it has evolved more paying strains, the seeds of which are being multiplied and distributed to the cultivators.

For the Tinnevely tract comprising the districts of Madura, Ramnad and Tinnevely, two strains viz. C. 7 and A 10 were isolated from Karunganni cotton at the Koilpatti Agricultural Research Station. They are being grown over 70,000 acres. The former type is being grown in the southern taluks of the tract while the latter is preferred in the northern part. They have a mean fibre length of  $\frac{7}{8}$ " with a ginning percentage of 30 as compared with  $\frac{3}{4}$ " staple and a ginning percentage of 27 of the local mixture. In yield it is as good as the local Tinnies. The lint fetches a premium of Rs. 5 per candy of 500 lb. It is declared suitable to spin 24's to 30's warp yarns.

Recently another strain called Koilpatti 1 has been isolated. It has an efficient plant body, a ginning percentage of 31 and a spinning value of 28's to 32's. It is able to withstand better the untimely February rainfall which causes a high shedding of buds and bolls in the other strains. Its average yield is therefore higher. The distribution of the seed was started only recently.

Cambodia Co. 2 is the strain recommended by the Department for cultivation in the Cambodia tract. Though it thrives best only on red and mixed soils, it is able to tolerate wide range of climatological conditions. It is a vigorous type with broad leaves and big bolls and is being grown over 75,000 acres. There is a very great demand for its seeds, which often secures a premium of 40% over the bazaar rate. It has a staple of  $\frac{9}{10}$ " and ginning percentage of 35. It gives an increased yield of 15% over the local unselected type. It is suitable to spin 28's and is offered a premium of Rs. 8 per candy of lint.

For Bellary and Anantapur districts—called Western tract in commerce—strain H. 1 evolved at the Hagari Agricultural Research Station has been found to be very suitable. It is being cultivated over an area of 200,000 acres. Its