Tests for Scholarships and Promotion.

IN the United States there are no scholarships offered to children passing from the primary to the secondary schools, and, except perhaps in New York, only a comparatively small number of scholarships are awarded for entrance into the universities. Moreover, the bases on which they are awarded are extremely numerous. These facts had to be borne in mind at the joint discussion of the Sections of Education and Psychology of the British Association at Toronto, in which eminent American men of science participated.

In Great Britain, on the other hand, scholarships are awarded on the results of tests, and it is therefore essential to investigate how well these tests—whatever their nature—are performing their function. At present, the most critical age is about eleven, when the child sits for the secondary school scholarship, but, as pointed out by Dr. Cyril Burt, the age of seven or eight, when children are promoted from the Infants Department to the Senior Department, is a neglected but crucial stage in the child's life, as his subsequent success in the scholarship examination may depend upon it. In fact, tests for scholarships to secondary schools are merely a particular case of tests for promotion. Thus, there may be tests for departmental promotion, for class promotion, for scholarships to secondary schools, trade schools, or even to the universities. Both in Germany and in the U.S.A. classes for gifted children have been formed, and it is argued that if psychological clinics are needed for selecting dull and stupid children, *a fortiori*, they are an essential prerequisite in selecting gifted children.

Prof. Whipple (U.S.A.) brought forward evidence to show that the selection of a class of bright children merely from those recommended by the teachers would have resulted in ignoring half of the brightest boys and girls; further, that pupils properly selected can accomplish two years' work in one, even under a mediocre teacher. Teachers are also likely to select for such work a number of pupils that ought not to be selected and that are certain to fail in the attempt to double their pace. It may be observed, in passing, that this question of determining what should be the acceleration of each pupil requires some caution, but, at present, it is rather beyond the province of this résumé.

Prof. Buckingham (U.S.A.) also showed that mental tests will prophesy with respect to the most capable children a rather high minimum of scholastic success, and will do this with high trustworthiness. This result was also shown to hold for university students, and it may be remarked that intelligence testing of university students has become fairly general in the United States. Reference was made to investigations carried out at Syracuse University, where a gross correlation of plus 0·60 between academic success and intelligence was obtained. It was found, however, that the relationship is closer among the more capable students and not so close among the less capable, so that, for the purpose of selecting successful students, the intelligence test is more trustworthy than the correlation coefficient, depressed as it is by the presence of the duller students, would lead us to expect.

There is now a mass of evidence obtained by independent investigators in different countries which enables an unprejudiced observer to draw certain broad conclusions, namely: (1) There exist at present certain mental scales of proved use in assessing the innate mental ability of pupils. (2) Even the judgments of capable teachers, when made independently of such tests, are often untrustworthy and unjust. When these two conclusions are generally accepted, it seems difficult to avoid the further conclusion either that teachers should be trained in the use of such tests, or else that all cases involving the assessment of the mental ability of an individual should be decided by qualified testers. Further, there is considerable evidence that children of high intelligence are also quite preponderantly children of good growth rates, sound health, good social spirit, industrious, ambitious, eager, and possessed of initiative and resourcefulness, who would unquestionably profit by reasonable educational acceleration and enrichment.

It is well worth while, however, to investigate what should be the *reasonable* educational acceleration of each pupil. It is often said that it takes all sorts to make a world, and objection may be made to the draining of the brightest children from a class; and further, that if the pupils in a class were as alike as peas in a bag, that class would be dull indeed. But let it not be forgotten that the advocate of such a procedure would be as rare and impractical as his antithesis who would abolish examinations altogether, even assuming that a psychologist could somewhere be found able to select such a class. The commonsense point of view would seem to be that of most teachers, namely, that reasonable acceleration is desirable, which means that more suitable treatment should be given to the brightest as well as to the dullest pupils for their own sakes, for the sake of the teachers, and for the sake of the community.

Vegetative Propagation in the Tropics.

PROBABLY no scientific problem more urgently needs attention in tropical agriculture than the establishment of standard yielding plantations from selected plants by methods of vegetative propagation. The commercial demand in the centres of distribution is always for a regular supply of produce of standard quality, and so long as the grower collects his crop from a plantation of chance selected seedlings of almost infinite variety, this commercial requirement cannot be met. With increasing competition, as supplies of tropical products arrive from new centres, as the development of tropical areas proceeds apace, it was certain that this point would gradually be grasped, and that, if cultural conditions permitted, the produce from vegetative propagation of standard varieties would oust the original variable supply from seedling stock, just as in Europe, and now in the United States, vegetative propagation is the rule over all the vast acreage supplying the world's needs in table fruit.

It is very instructive, for example, to read in Prof. Hendrick's book, "The Peaches of New York," that isolated experiments upon grafting peaches were made in the United States from 1770 onwards, largely upon the repeated insistence of English colleagues on the value of the method; but in the period between 1825 and 1860 the value of the uniform product thus available was realised, nurseries seemed to spring from the ground by magic, and whilst before that there were millions of peach trees grown and few varieties recognised, in that period some 400 varieties were carefully propagated and described, a number that by 1900 had reached a thousand.

British tropical possessions are as yet ill provided with the large and well-staffed experimental plantations, on which alone the experimental work can be carried out that is necessary before vegetative propagation can be resorted to upon a large scale with a staple crop. Unless provision is made for the experimental work and for the demonstration of the new methods to the staffs of the commercial plantations, a few decades may see British tropical products ousted from the markets by the more trustworthy produce from tropical areas developed by other nationalities upon more scientific lines. In this connexion the Ceylon journal, *The Tropical Agriculturist* (vol. 72, No. 2), undoubtedly does good service to British tropical agriculture by republishing the papers by A. A. M. N. Keuchenius upon the vegetative propagation of tea and by Dr. P. J. S. Cramer upon grafting in coffee culture, the latter being translated from the Dutch by H. L. Ludowyk, librarian to the Ceylon Department of Agriculture. Thus is made available to English readers the valuable scientific work carried out under Government auspices in the Dutch East Indies.

The Java experiments upon vegetative propagation of the tea-plant were the natural corollary of the selection experiments carried out upon this plant at the Government's Cinchona Plantations. Keuchenius describes no less than thirteen different methods of vegetative propagation which were tried, but whilst only 2 per cent. of cuttings were successfully propagated by placing branches, stripped of leaves, in moist sand, with crown-grafting an average of 74 per cent. of successes was obtained, with rectangular patch-budding about 87 per cent., and by upright stem layering, in which roots were encouraged to arise above a ring in the bark by enclosing this region of the stem in soil held in a split bamboo, more than 50 per cent. were successful.

Dr. Cramer's paper will well repay perusal because of its very general survey of vegetative propagation in the tropics, reference being made to the work at the experiment stations at Lampongs and at Bangelan, which has been directed to exploit the possibilities of vegetative propagation of all the principal industrial plants. He points out that the first experiments upon grafting coffee were initiated in order to protect the highly valued Arabian coffee from eelworm attacks by placing them upon a resistant root system. He describes also the Klein Getas graft as it was known in Central Java, a valuable hybrid plant which its owner, Dessauvagie, of course, failed to reproduce from seed; it was perpetuated by the success of the owner of the Klein Getas estate in propagating it by grafting from, in the first place, two branches which he succeeded in obtaining from the original tree. It is unfortunate that in the translated account the word graft-hybrid, which has quite a different connotation in recent literature, is frequently used for this propagation of a valuable hybrid, obtained by ordinary pollination means, by the ordinary method of grafting.

Dr. Cramer has been advocating grafting in the case of coffee since 1907 in order to arrest the deterioration that was manifest in Liberian coffee; he has had an uphill task, but since 1914, when he took charge of the Coffee Experiment Station at Bangelan, he has been able to carry out his experimental plans upon an extensive scale. He has now no less than 250 small plots, grafted from separate selected parent trees, 139 larger plots in which selected grafted forms are being developed to provide scion shoots for larger hectare plots; 30 hectare plots with 1100-1600 plants on each plot were planted at the end of 1918–19. Records of the plots are being kept, the grafted plants yielding a regular harvest since the trees came into bearing. On a number of old plantations, trees have been cut back and grafted, the plantations thus being rendered a good deal more productive and the yield, of course, more uniform. This work has shown that the process of transformation to a grafted plantation can be carried out gradually, and the loss resulting from the crop one has to forgo is thus minimised.

University and Educational Intelligence.

ABERDEEN.—The following appointments to assistantships have been made: F. W. F. Hendry (agricultural chemistry); R. G. J. Fraser (natural philosophy); W. Niven (pathology); W. J. Ironside (veterinary hygiene).

CAMBRIDGE.—Prof. A. C. Seward, Master of Downing College, has entered into office as Vice-Chancellor of the University for the Academic Year 1924-5.

DURHAM.—Sir William Bragg, Fullerian professor of chemistry in the Royal Institution, opened the new College of Pure Science in October 1. After the ceremony, Sir William Bragg was given the honorary degree of D.C.L.

Applications are invited by Armstrong College for an adviser in agricultural mycology and an advisory agricultural economist. A British University degree is necessary; also some agricultural experience. Applications (10 in number) should be sent not later than October 20 to the Registrar, Armstrong College, Newcastle-upon-Tyne.

GLASGOW.—The King, on the recommendation of the Secretary for Scotland, has approved the appointment of Dr. H. H. Dixon, professor of botany in the University of Dublin, to be Regius professor of botany in the University in succession to Prof. F. O. Bower.

LONDON.—The following four candidates have been nominated for the by-election for the parliamentary representative of the University of London, in succession to the late Sir Sydney Russell-Wells: Sir John Rose Bradford (Conservative); Dr. F. G. Bushnell (Labour); Dr. E. G. Graham Little (Independent); Prof. A. F. Pollard (Liberal). The first three are medical men, while Prof. Pollard is professor of English history at University College. Polling, which will be by voting paper only, will take place on October 13-17, closing at 5 P.M. on the latter date. The results will probably be announced at 11 A.M. on October 18.

The vacancy in the Senate of the University caused by the death of Sir Sydney Russell Wells will be filled at the meeting of Convocation to be held on Tuesday next, October 14. There are three candidates, namely, Prof. Dame Helen Gwynne-Vaughan; Sir Josiah Stamp, the distinguished economist and statistician; and Dr. J. S. Bridges. Dame Helen Gwynne-Vaughan is professor of botany at Birkbeck College, and has for many years taken an active part in the work of the University. The XXth Century Society of London Graduates is strongly supporting her candidature, and has issued a circular, a copy of which has reached us, describing her many public services, and referring to her important contributions to botanical science. In her election address, Dame Helen remarks, in stating the main principles for which she stands:—" Situated at the heart of the Empire and in touch with unrivalled materials for research, the University has imperial responsibilities which can only be met by greatly increased provision for postgraduate study; places should be available not only for our own graduates