

social intercourse students of different subjects. At the present time there is a great denunciation of the prevalence of classical studies and a demand for education in natural science. But it is worth while just now to insist that specialisation in mathematics or natural science, if divorced entirely from the more human studies, or from intercourse with those who are pursuing such studies, may be educationally disastrous in the last degree. Of course, it is sometimes suggested, as I remarked earlier, that the study of natural science produces a scientific type of mind. But this is one form of the confusion to which I alluded at the outset which results from our speaking of natural science by the general name of "science." The study of languages and history can be, and ought to be, just as scientific as the study of physics.

We may state the question perhaps in this way. In order that a man may live his life and discharge his responsibilities as a citizen he needs knowledge. What is the most important sort of knowledge to have? None can be put on a level with the knowledge of human nature. Whatever a man is going to do he will have to deal with his fellow-men and find his own place among them. This knowledge cannot be adequately obtained from books alone, and, as I have said already, training through membership in a social life is the best means to it. But it may be also fostered in a very high degree by what are called the humane studies: the study of the best that men have thought in philosophy, the study of their highest aspirations and deepest woes in literature, the study of their attempts and their achievements in history. This is the most serviceable of all scientific studies that a man can undertake. But it is no doubt true that we have allowed two evil things to happen. In the first place, we have not sufficiently recognised the value of natural science in education, and, still more disastrous, we have tended to identify the study of the humanities with the study of the classical languages.

The chief point that I wish to urge is that the classics are not the only available form of humane study. I should like to see an experiment conducted on the following lines. The staple of the school curriculum to be European history and English literature. At the bottom of the school there should be elementary Latin, which undoubtedly provides good mental gymnastics, and, of course, elementary mathematics and natural science. Perhaps also French, though of this I am more doubtful. Those boys who showed real facility in Latin should, if they so desired, begin to study Greek at about the age of sixteen or sixteen and a half. They should then have one term in which they do very little except Greek. Experiments suggest that in forms consisting only of boys who have already shown some aptitude for a classical language one term's concentrated study will bring them to the point reached by efforts of several years according to our present methods, and the devotion of a single term to this would not seriously interrupt the general course. There would not be a classical side and a modern side, for the staple study of the whole school would be history; but there would be, above the point indicated, divisions for Latin and Greek as there now are in classical schools for mathematics. These would have allotted to them all the hours on the time-table that were not required for the history and literature, for it is of no use, broadly speaking, to read classics after that time unless they are given almost the whole of the student's attention. The study of ancient civilisation, which is what the study of the classics ought to be, is itself something far too rich to come under any condemnation of specialism. Boys who do not take this classical course would take mathematics, science, and at least one modern language, the mathematics and the science being so far as possible com-

binised; specialisation either in the linguistic or the scientific branch would be encouraged in the highest departments. There would also, of course, be opportunity for specialisation in history by means of divisions which would provide a course of study supplementary to that which formed the staple of the school curriculum.

Meanwhile there is one serious evil which could be remedied at once. It is the business of the universities to be the guardians and upholders of a true educational ideal against the natural utilitarianism of the man of affairs. By their scholarship system the universities exercise a far-reaching influence on secondary schools. They give far more scholarships for classics than there are deserving candidates; they do a good deal for natural science and mathematics; they do something, though absurdly little, for history; but they practically do nothing at all for modern languages. To this branch of study they give no encouragement such as might help the schools to treat it in a truly educational way. I want to see boys and girls who study modern languages reading the great literatures which constitute the value of those languages as boys at the top of a classical side read Æschylus and Plato. But we shall not reach that without help from the universities, and at present the universities refuse their help.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—A Grace has passed the Senate sanctioning the admission of women to the first and second M.B. Examinations under conditions similar to those under which they are admitted to the Previous Examination and the Tripos Examinations.

The Appointments Board has just issued its third quinquennial report. It gives ample evidence of the valuable services which the board is rendering to graduates of the University, as well as to firms and public bodies who are in need of highly trained young men. The report shows that a large number of firms have employed Cambridge graduates on the administrative side of their business, and some forty firms are in the habit of applying to the board for scientific assistants. Among the industries represented by these latter firms are chemicals, iron and steel, coal-mining, dyeing, brewing, and the manufacture of paper, drugs, explosives, soap, and glass. Geologists, agricultural chemists, botanists, and mycologists have also found technical employment. Satisfactory as this record is, the board hopes that after the war the range of employment may be greatly increased. The engineering students have been appointed to mechanical, electrical, and civil engineering firms, iron and steel and ship-building firms, firms manufacturing aircraft, chemical engineering works, railways, and a number of public works departments in different parts of the Empire. The agricultural students also obtain employment over a large area, including various British Colonies. Of the work of the board during the war it is not yet time to speak in detail.

LONDON.—At a meeting of the Senate held on November 15 the Rogers prize of 100*l.* for 1916, for an essay on "The Nature of Pyrexia and its relation to Micro-organisms" was awarded to Dr. J. L. Jona.

It is announced that Messrs. Baldwins, Ltd., have given 10,000*l.* to the Swansea Technical College for the endowment of a chair of metallurgy.

MR. C. FENNER, principal of the Ballarat School of Mines, has been appointed superintendent of technical education in South Australia, a position created under the South Australian Education Act.

OWING to the increasing interest shown by the public in hygiene and public health, more especially in the national question of the saving of "child and infant life," the governing body of the Battersea Polytechnic has decided to open the Hygiene Department for public inspection on Saturday, November 25, from 3 to 6 p.m. The lecture-rooms and laboratories, together with an exhibition of apparatus and models used for teaching purposes, will be on view. No tickets of admission are required.

IN consequence of so many probable competitors for the Fairchild Scholarship and prizes of the Pharmaceutical Society having been called to the colours, the trustees of the scholarship have decided that the examination for the awards shall not be held in 1917. It has also been decided that an arrangement shall be made by which those who are on service who would be eligible for the 1917 scholarship may, if they shall so desire, be admitted to an examination after the war.

IN August, 1915, the Board of Education gave notice that after 1916 the Lower General Examinations would no longer be held in any subjects of science and technology, but that the Higher General Examinations would for the present be continued. It is now announced that no Lower Examinations will be held in 1917, but that the Board of Education hopes to hold next year Higher Examinations in accordance with its regulations and syllabuses of 1916. After 1917 no Higher Examinations will be held in pure mathematics, theoretical mechanics, heat, magnetism and electricity, organic chemistry, coal-mining, and metallurgy.

RECENT issues of *Science* have recorded a number of bequests to higher education in the United States. The more important of these are as follows:—Yale University has received some 137,000*l.* from the estate of the late Mr. J. S. Hotchkiss; under the will of Mr. W. W. Lawrence, of Pittsburgh, Princeton University will ultimately receive 125,000*l.*; under the will of the late president of the University of Pennsylvania Museum, Mr. E. B. Coxe, junior, the University was bequeathed 100,000*l.* as an endowment of the museum, and 20,000*l.* towards increasing the salaries of professors; Columbia University has received 20,000*l.* from Mr. J. N. Jarvie for the new dental school; and the University of California 14,000*l.* from Prof. G. H. Howison and his wife. The General Education Board of the Rockefeller Foundation has undertaken to provide 40,000*l.* to complete the 200,000*l.* endowment fund which Vassar College is raising.

THE British Prisoners of War Book Scheme (Educational) makes an urgent appeal for books on natural history and scientific subjects generally, to meet actual requests received from British prisoners (soldiers, sailors, and civilians) interned in enemy or neutral countries. Among the special books asked for this week are:—"Cambridge Natural History"; "British Fresh-Water Algæ" (West); "Fungus Diseases of Trees" (Hartig); "History of European Fauna" (Scharff); "Mammalia" (Beddard); "Mammalia of India" (Blanford); and "Birds of India" (Jerdon). Books of a modern and advanced character are also needed in forestry, electrical engineering, motor engineering, telegraphy, wireless telegraphy, mineralogy, and veterinary science. Readers who may be able and willing to contribute one or more of the above works to this war charity are invited to forward to Mr. A. T. Davies, at the Board of Education, Whitehall, London, S.W., a list of the books they can offer. They will then be notified as to the acceptance of their gifts. Further particulars of the book scheme may also be had on application to Mr. Davies.

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THE incidence of infant mortality, especially in urban districts, has emphasised the urgent need for greater efforts directed to the protection of infant life. Among the agencies for securing this aim systematic instruction in the hygiene of child-life occupies an important place. Voluntary societies exist through which much work has already been done, and the Local Government Board for Ireland has recently issued a circular letter outlining a scheme dealing with maternity and child welfare, in aid of which a grant of 5000*l.* has been made available. To ensure due co-operation between medical and other public officers on one hand and voluntary workers on the other, and to render the work of the latter efficient and effective, the Department of Agriculture and Technical Instruction for Ireland has prepared and circulated a syllabus of instruction in child hygiene. The Department is prepared to consider the recognition of classes in the syllabus conducted by local technical instruction, and other approved, committees, and in certain circumstances to pay grants in aid. The instruction must be under the direction of a qualified medical practitioner and a trained nurse, but recognition may be extended to other suitable persons. If desired, the Department is prepared to conduct an examination at the close of a course of instruction, and to award certificates of proficiency.

AN article on "Science in the School," in the *Times Educational Supplement*, by Sir Clifford Allbutt, may be commended to the thoughtful consideration of headmasters and others. The notion of some headmasters that it is sufficient to introduce science in a school as a "complementary" subject is unsparingly pilloried. The methods of science must permeate the curriculum, since, as the article urges, they pertain "to all spheres of knowledge and wisdom, natural and humane, a leaven rather than an ingredient." The cry of *what* is to be taught to boys is of less importance than the vision of *how* things are to be taught. In young boys "the brain-web is built, not by reflecting, but by doing." The qualities wanted of young men in the greater world are spontaneity, initiative, ready wits in tight places, all of which depend upon structures in the brain, organised, not by reading, but by former activities. Affirming these things, Sir Clifford Allbutt reiterates "science is a method, a method to inform, not our studies of material things only, but all studies, material, social, and spiritual." It is good to find the article insisting that before we can have good teaching we must have trained teachers; it would have been better if it had been added that we must have reasonably paid teachers. The suitable form of science teaching for various classes in the school is described, and altogether the essay should assist the anxious headmaster. It is a pity, however, that Sir Clifford Allbutt seems not to have acquainted himself with the work of the many secondary schools which have been developed since the Education Act of 1902. There at least the boys study mensuration in the practical way he suggests, and much work in experimental science of a sane kind is being accomplished.

## SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, November 9.—Sir J. J. Thomson, president, in the chair.—W. M. Bayliss: Methods of raising a low arterial pressure. When the arterial pressure is low from loss of blood it cannot be brought back, except to a certain degree, by the injection of saline solutions into the veins in quantity equal to that of the blood lost. But if the viscosity of such solutions is made equal to that of blood, a return to normal height is possible. The effect of saline injections containing gum or gelatine is also much more lasting than