

tion of the Central Technical College during the last few years show that no institution in the kingdom requires from candidates for admission the same standard of attainments. Indeed, with the exception of two institutions, none of those receiving any part of the Government Grant of £15,000 a year allocated to University Colleges, require students above sixteen to submit to any entrance examination whatever, and the examination of these two is of the simplest character, and bears no comparison with that of the Central Technical College. The Committee considers, therefore, that the Central Technical College is somewhat handicapped in its competition for students by the difficulty of its matriculation examination. At the same time they are of opinion that it is important that an institution, avowedly intended for higher education, should require candidates for admission to pass such an entrance examination.

There is another class of students for whom provision was made in the original scheme, in attendance at the College, who are not required to pass the matriculation examination, nor to take any prescribed course of study. These are the so-called "special" students. They are in most cases students of more advanced age, who are desirous of pursuing for a session, or even a part of a session, a special line of study, with a view to qualifying for some particular industrial position or for teaching purposes, or for research work. Of such students, some have graduated at other universities, here or abroad; others have already been engaged in commercial works; and the evidence received from former students of this class satisfies the Committee as to the advantages derived from the facilities which the Central College offers for such specialised study. The gain to industry and commerce, and to the progress of science by the steady work and the careful researches of such students, is alone ample justification for the expenditure which the maintenance of an institution affording such facilities involves.

Although the number of students in attendance at the College cannot be considered, by itself, a sure criterion of its success, there is no other institution in Great Britain or Ireland in which so large a number of student are receiving advanced instruction of the same character as that given at the Central Technical College.

In considering the educational work of the College, the large number of contributions to the advancement of science which have been made by the Professors individually and in co-operation with their students are referred to. Indeed the spirit of research pervades every department of the College.

The teaching is well calculated to give to the student that general knowledge of scientific principles which all practical men regard as of primary importance, supplemented by the experience in the application of those principles to the methods of original investigation.

The knowledge which the students are enabled to acquire in the engineering workshops, of the construction and use of machine and other tools, is especially useful in subsequently helping them in their own experimental work, and in enabling them to profit more quickly by the experience of the factory or workshop.

As regards the salaries of the Professors, that there are four Professors who each receive a fixed stipend of £1000 a year without any share in the students' fees. At most other Colleges the practice is to give the Professor a smaller salary and a share in the fees. Both practices have advantages; but the Committee are disposed to give the preference to the system adopted by the City Guilds—of making the Professor quite independent of his students' fees, so that he may have no interest in admitting unqualified and insufficiently prepared students into the College. Indeed, with a difficult entrance examination, such as that of the Central College, the fact that the Professors' remuneration depends in no way upon the fees paid by the students removes any suspicion of a tendency to undue leniency on their part in the admission of the students. Several of the Professors in other institutions are more highly remunerated, and enjoy at the same time a larger measure of liberty than those at the Central Technical College. At Liverpool, the payment to the Professor of Physics for the year 1894-5 was £1177 16s. 7d.; to the Professor of Engineering £1039 17s. 7d. At University College, London, the payment to the Professor of Chemistry for the same year was £1100 13s. 4d. At Owens College, Manchester, the Professor of Mathematics received £1048 6s. 8d.; the Professor of Chemistry £1220 13s. 8d. At the Scotch Universities the salaries of the Science Professors are considerably higher.

The Educational Committee, finally, express their opinion

that the work of the College has been eminently successful, and that the City Guilds Institute is to be congratulated on what it has accomplished. The results achieved are, in their opinion, fully commensurate with the expenditure involved.

Having regard to the higher appreciation of the advantages of advanced technical instruction, which a further knowledge of what is being done on the continent and in the United States is likely to bring about, it is believed that in the near future, the Central Technical College will be found too small for the number of students who, attracted by the excellence of the training it offers, will seek admission, and that the question of the extension of the building may before long have to be considered.

The Reports of the Sub-Committees on Finance and Administration, and on the Educational Work of the College, were adopted by the Committee. To sum up the case, this Committee reports that, in their opinion, the Governors of the City and Guilds of London Institute possess in the Central Technical College an Institution which has well and economically carried out the objects for which it was founded; and that those objects are well deserving of every support and encouragement that the Corporation and City Companies of London can give to them.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Dr. James Ward, whose name is well known as a physiological psychologist, was on Saturday elected to the new Professorship of Mental Philosophy and Logic. Dr. E. Barclay-Smith has been appointed Senior Demonstrator, and F. C. Kempson Junior Demonstrator in the department of Anatomy. Dr. J. N. Keynes has been appointed by the Council of the Senate to act on the joint committee for promoting legislation on secondary education now sitting in London. Mr. Yule Oldham, University Lecturer in Geography, is this term lecturing on the geography of Central Europe, and also (in conjunction with Mr. J. E. Marr, F.R.S.) on the scientific study of scenery. The geographical classes have of late been larger than in any previous year, and Mr. Oldham is steadily gaining ground for his subject in the University. Certain changes in the Historical Tripos will lead students to devote more of their time to political geography, and a new section of the higher local examination deals with the wider aspects of the science. The studentship of 100*l.* offered by the Royal Geographical Society to members of the University attending his lectures, will be awarded at the end of the present term. Mr. W. Bateson, F.R.S., of St. John's College, is this term giving a special course of lectures on the study of variation, which he has made peculiarly his own. A Shuttleworth Scholarship of 55*l.* a year for three years will be awarded at Gonville and Caius College in March. The subjects are botany and comparative anatomy, and candidates must be medical students of not less than eight terms' standing.

LORD WANTAGE, Mr. Richard Benyon, and Mr. Herbert Sutton have each given 1000*l.* to the building fund of the University Extension College, Reading. Mr. G. Palmer, Mr. G. W. Palmer, Mr. W. Palmer, and Mr. A. Palmer have each contributed 500*l.* for the same object, and the Drapers' Company have promised 1000*l.* on condition that a sum of 12,000*l.* is raised without delay. The Hampshire County Council have voted 1000*l.* out of accumulated surplus for the foundation of exhibitions in connection with the College.

THE following are among recent announcements:—Dr. Wilhelm Valentiner, formerly director of the astronomical observatory at Karlsruhe, to be professor of astronomy at the University of Heidelberg, whither that observatory has been removed; Dr. v. Buchka has taken up his residence at Berlin as successor to the late Dr. Eugen Sell in chemistry; Mr. J. G. Luehmann, for many years assistant to the late Baron von Mueller in the Government Botanist's Department, to be curator of the Melbourne Herbarium; Prof. B. Hatscheck, of Prague, to the chair of zoology in the University of Vienna, vacant by the resignation of Prof. K. Claus; Prof. Th. Curtius, of Kiel, to be professor of chemistry at Bonn, in succession to the late Prof. Kekulé; Dr. P. E. Study, associate professor of mathematics at Bonn, to be professor of mathematics at Greifswald; Dr. G. A. Tawney, Princeton, to be professor of philosophy in

Beloit College, Wisconsin; Dr. S. Kalischer to be professor of physics in the Technical High School at Charlottenberg; Dr. W. Autenrieth to be provisional successor to the late Prof. Baumann in the chair of physiological chemistry in the University of Freiburg, in Baden.

AT the ordinary general meeting of Convocation of the University of London, on Monday, the report of the annual committee was adopted. The recommendations of a sub-committee, appointed to consider the possibility of rendering the library and laboratory of the University more available for general use, came up for discussion. A motion was carried expressing regret at the lack of a University Hall, which compelled the Senate to use the library for purposes for which it was not intended, and asking the Senate to consider whether steps could not be taken to remove the limitations which exist to the free use of the library. The sub-committee reported that the chemical and physical laboratories of the University are, *qua* laboratories, non-existent; but no remedies for these defects were suggested. It was pointed out that a complete and radical reorganisation is needed in the equipment of the University before its laboratories can be regarded as adequate for even the restricted purposes of examination, to say nothing of those of teaching or research. Indeed, the sub-committee doubts whether a laboratory equipped for the purpose of examination can properly be used for teaching or research. The Council of the Royal Botanic Society have offered a site, free of cost, for the erection of a students' observatory in connection with the University, together with the use of a lecture-room. The report of the annual committee adds that boards of studies in the subjects of physics, chemistry, botany, modern languages and literatures, mental and moral science, classics, political economy, and zoology are now actively engaged in the revision of the various syllabuses.

A STRONG committee, representing the leading associations concerned with technical and secondary education in this country, was formed last October to consider the ways and means of promoting legislation for secondary education. The committee has now unanimously adopted a number of resolutions, and submitted them to the Lord President of Council. Among the resolutions are the following: (a) In order to bring the State into a fitting relation to secondary education, it is necessary to provide for the constitution of a central authority suitable for this purpose (under a Minister of Education, when appointed), simultaneously with the provision of local educational authorities. (b) To this central authority should be transferred the powers and functions at present exercised by the Education Department and the Science and Art Department, so far as they relate to secondary education. In the opinion of this committee, it is of urgent importance that the Charity Commission should, as soon as possible, be included in the central authority, so far as its educational functions are concerned. (c) The central authority should include an educational council constituted on the principle laid down in the Teachers' Registration Bill of 1896, which council, in addition to the duties imposed on it in that Bill, might advise the Minister on the schemes for the constitution of local authorities and other matters referred to it by him. (d) There should be created a local authority for secondary education in every county or county borough, but in no areas smaller than these. Adjoining counties and county boroughs to have power to unite. (e) Scholarships and exhibitions should be tenable at, or open to the pupils of, any efficient school or institution; and this should not be regarded as aid to the school or institution within the meaning of the Act. (f) It is desirable that the legislation proposed should include a Bill, similar to the Bill of last Session, for the purpose of registering teachers qualified to teach in secondary schools, with this modification, that the third group of representatives of teachers on the registration council should be elected by persons not included in groups 1 and 2.

SPEAKING at a dinner given by the Drapers' Company, on Thursday last, to "meet the Lord President of the Council and the Incorporated Association of Head Masters," the Duke of Devonshire sketched the position of the Government with regard to secondary education. In the course of his remarks, he said:—"This would not, I think, be a fitting opportunity on which I should attempt to discuss the measure which I trust may at no distant date be introduced bearing upon this subject by Her Majesty's Government. But I think I may safely say that when

the time comes when Parliament will be called upon to deal with this question a very considerable agreement will be found to exist as to the principles—the general principles—I will not say the details—upon which it should be founded. I believe that the principles which have been laid down in the report of the Royal Commission on Education, which was published a year, or a little more than a year ago, have met as to their general lines—I refrain altogether from saying as to their details—with the general approval and the consent of those who have been concerned either in an administrative or a professional capacity with this subject. You will remember that those lines were, generally speaking, drawn in local rather than in centralised directions, and that while the necessity has been admitted for unifying and concentrating many of those educational forces, which are at present unduly and unnecessarily dispersed, the Commissioners have carefully borne in mind the necessity of doing nothing to injure that which they themselves have described as the rich variety of our educational life, or to impair the individual energy and activity which has actuated it. These are the principles which I believe and trust will underlie any measure which the Government may ultimately feel itself able to introduce. As to what needs to be done, there is first the necessity of remodelling the central authority, which probably may be done rather by administrative than by legislative methods, exercising powers which will be chiefly those of superintendence, revision, and advice, but for the exercise of which the central authority ought to combine the knowledge of endowed schools, of organised science schools, of science and art schools, of higher grade Board schools, which is now possessed by various and separate departments of the Government. Secondly, I think we are all pretty universally agreed that it is necessary to constitute some local authorities administering the secondary education over areas of sufficient extent; and, thirdly, something in the nature of an educational council ought to form part of the central authority, although it would have to exercise, not administrative, but purely consultative functions."

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, January 11.—M. A. Chatin in the chair.—The Secretary announced to the Academy the loss it had sustained in the death of Dr. Gould, Correspondant in the Section of Astronomy.—Notice on the scientific work of Benjamin Apthorp Gould, by M. Lewy.—Researches on the composition of French and foreign wheat, by MM. Aimé Girard and E. Fleurent.—Observations on the periodic Brooks' comet (1889 *v*-1896 *c*), and the comets of Giacobini (1896 *d*), Brooks-Spéra (1896 *e*), Perrine (1896 *f*), and Perrine (1896 *g*), made with the long equatorial of the Observatory of Bordeaux, by MM. G. Rayet, L. Picart, and F. Courty.—Remarks by M. Armand Gautier, on presenting to the Academy a copy of his work on normal and pathological biological chemistry.—Alimentary hygiene; red and white wine, by M. P. Carles.—Note on a project for crossing Central Europe by an aerostat, by MM. G. Besançon and E. Aimé.—The rarefaction of air in balloons, by M. O. Julien.—New nebulae discovered at the Paris Observatory, by M. G. Bigourdan.—Observations on shooting stars of December 12, 1896, made at Athens, by M. D. Egenitis.—Remarks on the method of Gauss for the determination of the orbits of the small planets, by M. J. Perchot.—Distances of the solar system, by M. Delauney.—On the movement of a solid in an indefinite liquid, by M. R. Liouville.—Some remarks on a note by M. Delsol, entitled "On a thermic machine," by M. H. Pellat. The reasoning in question would make the machine described of higher efficiency than that given by the application to the case of the second law of thermodynamics. Two objections are raised to the arguments given by M. Delsol.—On the variation of the melting point with pressure, by M. R. Demerliac. The rate of change of melting point with pressure has been experimentally studied for paratoluidine, and for α -naphthylamine. The values obtained are in complete agreement with those given by the formula of Clapeyron, involving the latent heat of fusion and change in the specific volume.—On the absolute value of the magnetic elements on January 1, 1897, by M. Th. Moureaux.—On the density of ozone, by M. Marius Otto. The same flask was filled successively with dry oxygen and ozonised oxygen, and weighed, the amount of ozone present being after determined with suitable precautions by means of an