

Estudios superiores científicos; 3. Conferencias y cursos breves de carácter, ya científico, ya popular; 4. Una biblioteca y los Gabinetes dotados del material correspondiente; 5. Un boletín para publicar sus documentos oficiales y trabajos científicos; 6. Concursos y premios, y cuanto contribuya á promover la cultura general y sus propios fines." These extracts from the statutes, ratified May 31, 1876, will sufficiently show the aims of the Institution, and show also what is being done for the cultivation of science in Madrid. Running through Nos. 10-15, 18-21, is a list of 728 shells, in the natural history cabinet, arranged on the method of Dr. Woodward's "Manual of Conchology," and in Nos. 22, 23 are catalogues of plants in herbaria from the Province of Avila and from the Philippine Islands. In Nos. 24, 25, a classification of rock specimens. The contents of the several numbers are of the same general character as we indicated in our former notice. The papers on Haeckel's morphology are continued, and the same professor (A. G. de Linares) has papers on the classification of geometrical figures, and on some recent publications on crystallography and mineralogy. The syllabuses are given of courses of lectures on two or three languages, on mathematics (arithmetic and synthetic geometry) and other subjects. We can only wish success to this the first (we believe) society, of the kind that has been formed in Spain.

No plant perhaps has a more varied adaptation than the bamboo. In every country where these gigantic grasses grow they are put to a multitude of uses. It is not then because the bamboo is incapable of being converted to any other use that so much attention has been given to it of late with the view of turning it into a source of supply for paper material. It is more on account of its rapid growth, the ease with which it can be propagated and its abundant yield, together with its wide geographical range, that such interest has been roused in it, for the several species of bamboo are found in most tropical parts of the world. If, however, it should become a regularly recognised paper material there is no doubt that our supplies would be obtained chiefly from the East and West Indies. With regard to its growth in the latter country there seems to be a prospect that it may prove successful for cultivation in plantations specially formed for growing the plants for paper stock. There are, of course, extensive natural resources of bamboo, but it is thought that by cultivation and a system of irrigation the yield would be greatly increased and the cost of keeping up such a plantation would, after the first two years, be almost *nil*. It is by no means improbable that the bamboo will in the course of time become an important paper-making commodity.

A STRANGE meteorological phenomenon was recently observed at Logelbach, in Upper Alsacia. The rising sun seemed to be surrounded by a vast column of fire. An eye-witness describes the occurrence in *La Nature*. When he began his observations, the column had already reached a height of 25 or 28 degrees. Its breadth remained constant, and amounted to 2 or 2½ degrees. Its colour was greyish red, and at its upper end orange; the dull and cloudy sky formed a fine contrast with the brilliant phenomenon. From 6.30 A.M. till 7 o'clock its brilliancy remained much the same, while its extent towards the west increased by about 4 or 5 degrees. At 7 o'clock the sun's disc appeared above the horizon, and its tint was an intense red. The whole sky now seemed to be a gigantic rainbow, all the shades of which appeared in horizontal layers, forming a splendid background to the bright red and orange vertical column. A minute later the sun lost its red tint and the column gradually decreased; for five minutes it formed a band of 5 degrees in height, and then disappeared altogether.

DECADE V. of the "Prodrómus of the Palæontology of Victoria," by Mr. Frederick McCoy, of the Geological Survey

of Victoria, deals, by means of well-executed lithographic illustrations and text, with numerous fossils of the tertiary and Upper and Lower Silurian formations.

THE recent numbers (26-31) of Bentley and Trimen's "Medicinal Plants" fully maintain the excellence of the earlier ones. Among the admirable plates of well-known plants in these numbers may be mentioned those of *Aconitum ferox*; the opium-poppy, *Papaver somniferum*; the liquorice, *Glycyrrhiza glabra*; the indigo, *Indigofera tinctoria*; the camphor, *Cinnamomum camphora*; and the sabine, *Juniperus sabina*. The only one in these numbers which does not strike us as so happy, is that of the common marjoram, *Origanum vulgare*.

WE regret that the name of M. Milne-Edwards somehow got among the catalogue of the eminent men whom we named last week as having gone over to the majority during the existence of NATURE. We are glad to say that M. Milne-Edwards, though as old as the century, is as active as ever.

THE addition to the Zoological Society's Gardens during the past week include a Lion (*Felis leo*) from Africa, presented by Mr. J. D. Massey; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. G. W. Twining; a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. J. M. Neil; a Black-eared Marmoset (*Hapale penicillata*) from South-East Brazil, presented by Mr. Walter M. St. Aubyn; a Common Cormorant (*Phalacrocorax carbo*), European, presented by Lord Braybrooke; four Green Lizards (*Lacerta viridis*) from the Isle of Jersey, presented by Mr. F. E. Lawder; a Black Ape (*Cynopithecus niger*) from the Celebes, a Brazilian Tree Porcupine (*Sphingurus prehensilis*) from South America, deposited; two Lesser Birds of Paradise (*Paradisæa papuana*) from New Guinea, two Black Storks (*Ciconia niger*) European, purchased; two Black-faced Spider Monkeys (*Ateles ater*) from East Peru; a Common Cassowary (*Casuarus galeatus*) from Ceram, a Golden-winged Woodpecker (*Colaptes auratus*) from North America, received in exchange; a Great Kangaroo (*Macropus giganteus*), an Eland (*Oreas canna*) born in the Gardens.

ACADEMIC LIBERTY IN GERMAN UNIVERSITIES¹

IN taking possession of the high functions to which the vote of my colleagues has raised me, my first duty is to renew here, publicly, the expression of my thanks towards those who have given me this proof of their confidence. Its value is all the greater in my eyes because it has been given to me notwithstanding the few years I have passed among you and notwithstanding my function of professor in the natural sciences which form, in the curriculum of university education, a foreign element, the introduction of which has caused the modification of several points in the ancient organisation of the faculties, and will yet induce others in the future. The department of physics to which I have devoted myself is exactly that which contains the theoretical foundations of all the other branches of the natural sciences, and which presents in the most striking form the characteristic features of their methods. Thus I have several times already been compelled to propose to the University modifications in the rules previously followed, and I have had the pleasure of being always backed by the hearty support of my colleagues and the University Senate. Since you have chosen me to direct the University during the course of the next year, it is a proof, in my eyes, that you do not regard me as a rash innovator.

The object, the method, the immediate aim of the natural sciences may at first sight appear altogether distinct from those of the moral sciences; it seems to men accustomed to occupy themselves exclusively with the immediate expression and the proofs of the intellectual life, that they have nothing to learn from the results of these sciences, and that they have for them only a remote interest. But, in reality, as I have already

¹ Rectorial Address of Prof. Helmholtz, F.R.S., at the University of Berlin.

endeavoured to show in my rectorial address at Heidelberg, there is a very close relationship between the two orders of sciences; they pursue the same final end by processes which, at bottom, are the same. If the greater part of the researches in the natural sciences have not for their immediate object an intellectual advantage, on the other hand, it should not be forgotten, that the power of the pure intellectual method is here shown much more clearly, and a penetrating analysis of phenomena makes known the true and the false with much more precision than can be the case in the complex problems of the moral sciences.

Side by side with the development of this new branch of scientific activity, almost unknown in antiquity, the changes which have supervened in political, social, and even international relations, also exercise an influence which must be taken account of. The circle of our students is enlarged; the transformation of public life entails new exigencies; the various branches of science are more and more subdivided; it becomes necessary to add to libraries other means of study more and more considerable and more and more varied. It is difficult to foresee what new wants and what new exigencies we shall have to face in the near future.

On the other hand, it is not only in our own country that the German universities have a place of honour: they attract the attention of the civilised world. Students speaking the most diverse languages flock to them from the ends of the earth. A false step may make us fall from this high position, and it would afterwards be difficult to regain it.

In these circumstances it is our duty to seek to discern clearly what has hitherto been the internal principle of the prosperity of our universities, what essential element of their organisation must be maintained intact as a thing sacred and inviolable, and in what direction our efforts should tend when reforms become necessary. I do not consider myself authorised to pronounce on these questions in a definitive manner. The point of view of each of us is necessarily a little exclusive; the representatives of other sciences may, from other points of view, advance different considerations. But I think that, in order to arrive at definite and fixed conclusions, it is necessary that each one seek to express exactly what are his particular ideas on these questions.

Over all Europe, in the Middle Ages, the universities had their origin in unions, free and private, of students grouped under the influence of celebrated masters. These unions regulated their own affairs. In recognition of the public services they rendered, the Governments soon accorded them guarantees, privileges, and honours, notably the right of examining their members and of conferring academic degrees. The students of that epoch were, for the most part, mature men, who resorted to the universities for the purpose of being instructed and without any immediate practical end. Soon they commenced to send young men also, placed very often under the care of older students. Each university was divided into more restricted associations, known under the names of Nations, Bourses, Colleges. The older graduate members of these associations, the *Seniores*, administered the special affairs in each of them, and met in general assembly to discuss the affairs common to all the university. We may see even to-day in the court of the University of Bologna the list and the arms of the members and *Seniores* of the various Nations which formerly composed it. The oldest graduates were regarded during their whole life as members of the association; they preserved their right of voting, a custom which has been continued almost to our own days, or which exists still in the college of the doctors of the University of Vienna and in the colleges of Oxford and Cambridge.

Thus, a free union of independent men, all brought together, masters and pupils, by the pure love of knowledge, the one anxious to know the treasures of intellectual culture left by antiquity, the other labouring to communicate to the new generation the enthusiasm for the ideal which had kindled their souls; such was the origin of the universities, whose organisation, in its principles and its details, was founded on the most complete liberty. We must not, however, believe that they admitted the liberty of education in the modern sense of the term. The majority showed itself very intolerant to differences of opinion. More than once those who found themselves in the minority were compelled to quit the university. This occurred not only when the Church intervened or when political or metaphysical questions were agitated. The faculties of medicine themselves, and at their head that of Paris, the most celebrated of all, would not tolerate any deviation from what they regarded as the doctrine

of Hippocrates. They expelled from their midst those who practised the medicine of the Arabs or who admitted the circulation of the blood.

The transformation which led the universities to their present situation was due principally to the action of the State, which provided them with material assistance, and, in exchange, assumed the right of interfering in their affairs. The progress of this development was not the same in the various countries of Europe; it was determined in part by the political situation, in part by the peculiar character of each nation.

Those which underwent the fewest changes were the two old English universities of Oxford and Cambridge. Their large revenues and the political tendency of the English to respect all acquired rights have preserved them almost absolutely from alteration, even on points where changes would have been extremely desirable. These two universities preserve even to-day the character of schools intended to recruit the clergy, formerly the Roman Catholic clergy, now that of the Anglican church. The laity participate in the education which is there given, in so far as that may contribute to general intellectual culture; but they must submit to the discipline and the mode of life which were formerly considered suitable for young clerics. They live together in kinds of colleges, under the surveillance of a certain number of elder graduates (Tutors) belonging to the same college; for the rest they follow the manners and customs of the wealthy classes of England. They can only go about in a certain costume, of a somewhat ecclesiastical cut, with special *insignia*, indicating not only their academic grades, but also their social rank. The education, in its basis and method, is that of our gymnasia, but a little more developed; in certain points only it approaches more the *repetitions* organised in our universities; thus, it is limited to the programme required for examination, and the students are bound to study certain books, indicated beforehand. The work of the students is controlled by very detailed examinations, which must be passed in order to obtain the academic degrees, and in which very special knowledge is required, but only in certain very narrow subjects. All the old degrees of the academic dignities, the baccalaureate, the licentiate, the mastership in Arts, the doctorate, are obtained by tests of the same kind. The lessons are generally given by the Tutors above referred to. But they do not teach by virtue of an official delegation like the masters in our gymnasia; there are rather special masters chosen by certain groups of students. There are few professors, and they give only a small number of lectures to a scanty auditory, and usually on a very special subject. These lectures do not constitute an essential part of the education; they serve at the most to furnish to some students, having a special interest to make great efforts, the occasion for more profound study. The various colleges are, moreover, completely separated from each other; the examinations, the conferment of degrees, the nomination of professors are the only matters common to the whole university.

It is only quite recently that students not belonging to the Church of England have been admitted, and that some little attempt has been made to provide for professional education in law and medicine. Among the professors of the English universities, there is a great number of very distinguished men, and who have a place in science. But the right of taking part in their election is not reserved to the Fellows actually forming a part of the corporation; it belongs equally to all the former Fellows, even when they have no longer any connection with the university, when they have no interests in common with it, and when they may be engaged in the struggles of political and ecclesiastical parties. The result is that party considerations, personal connections, and friendship, often exercise more influence on the elections than scientific merit. From this point of view the English universities have preserved all the intolerance of the middle ages. The professors are not required to reside in the university town; they may fix their abode in any part of the kingdom; they may even fill other functions at their convenience, often, for example, that of parish priest; it is enough that they give their lesson at the university once a week, sometimes even more seldom.

The English universities devote a very small portion of their enormous revenues to the endowment of chairs and to filling them with masters having an indisputable authority in science, and this little is badly employed. But they possess another institution which appears called upon to render the greatest service to scientific studies, although hitherto it has done very little in this respect; this is the institution of Fellowships. The stu-

dents who have passed highest in the examinations are authorised to remain in the quality of Fellows in their college, where they are lodged and boarded; they receive, besides, a pension of 200*l.*, which assures to them the liberty of devoting all their time to science. Oxford has 557 places of this kind, Cambridge 531. The Fellows may act as tutors to the students, but they are free not to use this privilege. They are not, moreover, obliged to live in the university town; they may spend their pension where they please, and preserve it during an indefinite period. Save in exceptional cases, they only lose it when they marry, or when they accept some employment. They are the legal successors of the old student corporations, by and for whom the universities were founded and endowed. But beautiful as the plan of the institution may be, fabulous as may be the sums devoted to it, the services which it renders to science are of the most mediocre in the judgment of all unprejudiced Englishmen. This is probably owing to the fact that these young persons, although they are the *élite* of the students, and find themselves in conditions exceptionally favourable to work, have not been, during the course of their studies, sufficiently profoundly penetrated by the vivifying spirit of science, to experience that enthusiasm and that passion which impels men to make personal efforts.

The English universities render, from certain points of view, very important services. They make their students cultured men, although little disposed to pass the political or religious limits of their party, and, in fact, they do not go beyond these; the Tories dominate at Oxford, the Whigs at Cambridge. We ought, above all, to seek to rival them in two things. In the first place, they develop in a very high degree among their students, at the same time a lively sense of the beauties and the youthful freshness of antiquity, a taste for precision and elegance of language; this is seen in the fashion in which the students manage their mother tongue. There is here, I fear, one of the weakest sides in the education of youth in Germany. In the second place, the English universities pay much more attention than ours to the physical well-being of their students. These live and work in spacious, well-aired buildings, surrounded with lawns and with masses of trees; their pleasures consist specially in games which, exciting a passionate emulation, favour the development of the vigour and dexterity of the body much more efficaciously than our military and gymnastic exercises. It must not be forgotten that if we deprive young people of the open air and of the opportunity of developing their vigour, they are all the more led to seek unhealthy distractions in the abuse of tobacco and strong drinks. We must admit, besides, that the English universities accustom their students to serious and energetic work, and make them preserve the habits of well-bred people. As to the moral effect of a rigid surveillance, it must be tolerably illusory.

The Scotch universities, and some small English universities of recent formation, as University College and King's College, London, and Owens College, Manchester, approach more to the German and Dutch type.

The French universities have followed a different, almost absolutely opposite course. In consequence of the tendency of the French to upset, in virtue of logical theories, all which is the product of a historical development, their faculties have become simple establishments of instruction, special schools preparing for a career, and in which the programme of education is subjected to fixed rules. They are completely distinct from the institutions devoted to the progress of science, such as the Collège de France, the Jardin des Plantes, l'École des Hautes Etudes. The faculties are absolutely separate from each other, even when they are placed in the same town. The course of study is determined with precision; numerous examinations serve to control the results. French education is limited to what is clearly and solidly established; it gives an exposition of this, well ordered, carefully elaborated, easily intelligible, without entering upon doubtful questions and without going to the bottom of things. The masters charged with distributing it only need to have acquired much. Thus, in France, it is almost a mistake on the part of a young man possessing a talent full of promise, to consent to become professor in a provincial faculty. The French system is well suited to give to students of moderate capacity knowledge sufficient to follow the routine of their profession. They have not to choose between different professors, and, consequently, they swear *in verba magistri*; there results a propensity to doubt nothing and to be self-satisfied. If the professor is good, that suffices for ordinary

cases, where the student has only to imitate what he has seen his master do. It is only in extraordinary cases that it may be seen if he has really acquired penetration and judgment. For the rest, the French nation is well endowed, lively and ambitious; this makes up for many of the faults of the system of education.

In the French universities—and it is a characteristic feature of their organisation—the situation of a professor is absolutely independent of the assent of his pupils. The students belonging to the faculty in which he is professor are bound to follow his lessons; the very high fees which are paid go to the treasury of the Minister of Public Instruction, and serve to cover the fixed salary of the body of professors; the State contributes to the expenses of the universities only to a very small extent. If, then, the professor has not really the passion for education, and if he has not the ambition of attracting a large auditory, he may remain indifferent to the success of his instruction and take it easy. Outside the lecture-rooms, where they take their courses, French students live without being subjected to any surveillance, without *esprit de corps*, and without particular habits, confounded with young people of the same age who follow other careers.

The development of the German universities has followed a course intermediate between these two opposite paths. They were too poor in private resources not to accept eagerly the help of the State in presence of the more and more costly demands of education. Consequently at the epoch when modern states tended to consolidation they were not in a position to defend their ancient privileges, and they had to submit to the directing influence of the State. Consequently for all the important affairs of the universities, the supreme decision was, in principle, reserved by the State, and in times of political and religious disturbance an inconsiderate use was often made of this supremacy. In most cases, however, the universities were favourably treated by the governments newly arrived at independence. They required intelligent functionaries, and the glory of their university threw upon them a certain *éclat*. The administrative functionary came, for the most part, from the universities and remained attached to them. Thus, in the midst of the tumult of war and of political convulsions, in all these states struggling with the tottering empire and occupied in consolidating their recent independence, while nearly all other special privileges disappeared, the German universities succeeded in retaining a much more considerable part of internal liberty (and indeed the most precious elements of this liberty) than was the case in conservative England and in that France which is feverishly chasing after liberty.

Among us the old conception of the student remains the same; he is always considered as a responsible young man who pursues science of his own accord, and who is free to regulate as he pleases the plan of his studies. If, for a small number of careers, it is still necessary to follow certain courses, this obligation is not imposed by the university as a university, but by the authority which will at a later period admit the candidate to follow these careers. Moreover, students have to-day, and had formerly, with few exceptions, full liberty to choose among all the universities of the German tongue, from Dorpat to Zurich, Vienna, and Graz. They may choose, besides, in each faculty, among the masters who teach the same subjects, without taking account of the distinction between ordinary professors, extraordinary professors, and privat-docenten. It is even allowable for them to obtain their instruction from books to any extent they may desire; it is, in fact, very desirable that the works of the great men of the past should constitute an essential part of study.

Outside the universities no surveillance is exercised over the conduct of the students, provided they do not come into collision with the agents of public security. Except in this case, the only control to which they are subject is that of their comrades, which prevents them from doing anything against the honour of the body. The universities of the Middle Ages were close corporations, exercising over their members a jurisdiction which was extended to the right of life and death. As the students found themselves for the most part on foreign soil, this special jurisdiction was necessary, not only to withdraw them from the judgment of the authorities of the country, but also to be able to allay the conflicts which arose among themselves, and to maintain in the corporation sufficient good order and good breeding to insure the maintenance of the hospitality offered. Under the influence of the modern political organisation, this academic jurisdiction has gradually given way before the ordinary jurisdiction; the last vestiges will soon disappear, but the necessity

always subsists in such numerous meetings of lively and eager youths, of submitting to certain restrictions calculated to preserve the tranquillity of their comrades and that of the citizens. It is to this necessity that, in cases of conflict, the disciplinary jurisdiction of the University authorities responds. However, this end is still more surely attained by the sentiment of the honour of the body, and it is gratifying to have to acknowledge that this consciousness of their moral solidarity, and of the obligations of honour in the case of every one resulting therefrom, remains alive among German students. I do not mean by this to approve of all the special prescriptions of the code of honour of students. There are among the number certain remains of the middle ages of which it would be good to get rid, but this is a thing which can only be done by the students themselves.

(To be continued.)

STRIDULATING CRUSTACEANS

AT the November meeting of the Entomological Society of London, the president, Prof. Westwood, directed the attention of the Society to a letter in NATURE (vol. xvii. p. 11) from Mr. Saville Kent, on the above subject, à propos of Mr. Wood-Mason's recent discovery of the existence of stridulating apparatus in scorpions.

Mr. Wood-Mason remarked that structures in Crustacea, some of which certainly, and all of which probably, are for the production of sounds, were first brought to notice by Hilgendorf—in V. der Decken's "Reisen in Ost-Africa (Crustacea)"—but had been independently observed by himself in a number of species during his dredging excursion to the Andaman Islands in 1872. They were paired organs, as in scorpions, the *Mygale*, and the *Phasma* to be brought to notice that night—that is to say, organs working perfectly independently of each other were on each side of the body. In some forms (I.) they were seated partly on the body (carapace) and partly on a pair of appendages; of these some (a) had the *scraper* on the body and the *rasp* on the appendages—e.g. *Matula*, in which the organs are developed in both sexes; and others (b) had the *rasp* on the body and the *scraper* on the appendages—e.g. *Macrophthalmus et affinia*, in which the scraper was formed by a sharp-edged lamellar projection on the meropodite of each of the chelipeds, and the rasp was the crenulated infraorbital margin; in these the apparatus could only be developed in the males, the females having short and small and quite inconspicuous chelipeds, which hardly reached so far as to the margins of the orbits. In others (II.) they were seated wholly on the appendages; in the males of the species of *Ocyrode* the *rasp* was on one and the *scraper* on another part of the same appendage; in those of *Platyonychus bipustulosus* the *rasps* were on one and the *scrapers* on another pair of appendages; the walking-legs of the second pair were here very long and robust, and their third joint (meropodite) had its upper margin produced upwards at apex into a sharp crest (the *scraper*); both Dana and Milne-Edwards had noticed the remarkable length and structure of this pair of legs, but the former alone had mentioned, in his description of the species, the regular transverse plication of the under surface of the propodite of the chelipeds, which constituted without doubt the *rasp*. The above did not pretend to be a complete account of stridulating apparatus in Crustacea; but separated as he at present was from notes, drawings, and specimens, he could not go into greater detail. The cases of *Macrophthalmus* and of *Platyonychus* had not, he believed, been previously recorded. In the forms alluded to by Mr. Kent, no special sound-producing apparatus seemed to be developed. Everybody who had searched for animals on coral-reefs or had dredged in tropical seas was familiar with the "clicking" sounds emitted by the *Alpheæ* and their allies. The sounds which here always accompanied so sudden an opening of their claws to their fullest extent that dislocation seemed imminent each time, might be caused either by the impact of the dactylopodite upon the joint to which it is articulated, or by the forcible withdrawal of the huge stopper-like tooth of the dactylopodite from its pit in the immovable arm of the claw; in which latter case the noises might be susceptible, *mutatis mutandis*, of the same physical explanation as that produced by the withdrawal of a tightly-packed piston from a cylinder closed at one end. These were the explanations that occurred to him while watching a small species that lived in force amidst the branches of the zoophytes called *Spongodes*, the masses of which crackled all over when brought to the surface. The sounds in this case resembled very closely those made when

sparks were taken by the knuckles from the prime-conductor of a small electrical machine. The sounds emitted by the Spheromid might possibly be produced by the impact of the terga of the posterior somites upon one another at the end of each movement of extension.

Mr. Wood-Mason then announced the discovery of stridulating organs in *Phasmida*, in a species of *Pterinoxylus*, and in illustration of his remarks exhibited an impression of Westwood's plate of Serville's species, *P. difformipes*. Here, as in Crustacea and some other Arthropods, an apparatus working perfectly independently of its fellow was developed on each side of the body. The rough prominent basal portion of the costal nervure of the wings formed the rasp, in connection with which was developed a large oval "speculum," "talc-like spot," or "mirror." The rasps were scraped by the sharp and hard front edges of the tegmina, the dome-like form of which seemed admirably adapted, and probably did, to some extent, serve to increase the sound by resonance. In Serville's species, according to Westwood's figure, the stridulating apparatus appeared to be more highly developed, the "mirror" being more distinct, and the tegminal cavities more spacious. The males of the *Pterinoxylæ* were unknown. We had here another case in which functional stridulating organs are present in females. The only other insects known to him in which stridulating organs were seated partly on the wings and partly on the tegmina were the orthopterous *Edipoda*, which, according to Scudder (*Amer. Nat. ii. 113*), stridulate during flight, in connection with which fact it was interesting to observe that the female *Pterinoxylæ*, though incapable of flight, needed to expand their organs of flight in order to bring their similarly situated apparatus into play.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—At Queen's College, James Henry Hickens, Epsom College, has been elected to a Natural Science Scholarship.

CAMBRIDGE.—The Rede Lecture will be delivered by Prof. Clerk-Maxwell, in the Senate House, on Friday, May 24, at half-past 2 o'clock, on the Telephone.

OWENS COLLEGE.—Should this institution ever be transformed into the University of Manchester, it will only be after overcoming a good deal of strong opposition. The Liverpool Town Council are to petition in favour of a new corporation with power to incorporate Owens College and other institutions, and that the new University do not bear any merely local or personal appellation. Naturally, also, the Yorkshire College does not look kindly on the proposal, although until Owens College resolved to take this step the two institutions were on very friendly terms. We trust some arrangement will be come to ultimately that will satisfy all concerned.

WORKING MEN'S COLLEGE.—The Science Classes at the Working Men's College, which, during the last three years have, under Mr. Dunman's teaching, have become so popular and useful a feature of that institution, assembled on Saturday last at the Broad Street Restaurant to celebrate the termination of a very successful course by a dinner. Mr. Thomas Hughes had promised to be present, but in his compulsory absence Mr. Dunman himself occupied the chair. A pleasing feature of the evening was the presentation to Mr. Dunman, by the students in these classes, of a handsome despatch box as a token of their appreciation of the thoroughly efficient manner in which he has discharged the duties of science teacher.

STRASSBURG.—The Extraordinary Professorship of Petrography, lately occupied by Prof. Rosenbusch, is to be filled by Dr. Cohen, of Heidelberg.

SCIENTIFIC SERIALS

THE *Journal of the Russian Chemical and Physical Societies* of St. Petersburg (vol. x. No. 3) contains the following papers:—On the mono- and dioxy-malonic acids (Part 2), by R. Petrieff.—Researches on the transformation of diethylcarbinol into methylpropylcarbinol, and on the synthesis and the properties of diethylacetic and methylpropylacetic acids, by A. Saytzeff.—On the synthesis of diphenylenephnylmethane and of diphenylenetolylmethane, by V. Hemilian.—On the falsification of butter, by P. Koulechoff.—On the elementary law governing the reciprocal actions between currents and magnets, by A. Socoloff.