some extent how curiously useful and protective their forms and colours often were, and all this was of great use to me."

I had hoped to be able to discuss some of the current problems which are before biologists, and towards the solution of which entomology might contribute largely. Such, for example, are Galton's and Weismann's views on the non-transmissibility of acquired characters, the *rôle* of what Mr. Bateson calls "discontinuous variation" in the origin of species, the recent efforts to throw light on the all-important subject of variability by the statistical methods introduced by Galton and now being worked at from the experimental side by Weldon, and from the mathematical side by Karl Pearson. I feel, however, that I have trespassed already too long upon your forbearance, and while again thanking you for the honourable position in which you have placed me, I can only express the hope that my special plea for a more liberal use of the speculative method among our working entomologists will not be regarded by those who hold different views as a breach of the privilege of that office to which by your courtesy I have been elected. Should there be any who entertain this opinion, I beg them to make a liberal discount for personality, and they will find that the ultimate motive has been to promote the best interests of our science.

## *UNIVERSITY AND EDUCATIONAL INTELLIGENCE.*

OXFORD.—The Waynflete Professor of Mineralogy (Mr. H. A. Miers), who has been absent during the early part of the term through illness, announces a course of lectures on Elementary Crystallography.

In a Congregation held last week, the proposal that a sum not exceeding £150 per annum for three years from October 1, 1894, should be applied out of the Common University Fund in maintaining a scholarship to be held by a student at the Marine Biological Station at Naples, was agreed to, *nemine contradicente*.

In a Congregation to be held on February 18, a form of statute amending the provisions of a statute made for the administration of the Lichfield Trust for Clinical instruction, will be proposed. The object of the statute is to provide for the conduct of the Pathological Department at the Radcliffe Infirmary by the Regius Professor of Medicine, or a person appointed by him, and for giving instruction in Pathology in accordance with the Regulations of the Board of the Faculty of Medicine.

The interest of the University is at present absorbed in the resolutions respecting the admission of women to the degree of B.A., which are to be submitted to Congregation on March 3. The first resolution, which proposes that women shall, under certain conditions, be admitted to the degree of B.A., will if carried tend to promote the study of every subject by women in Oxford, and therefore has an ultimate bearing on scientific studies. At the same time it will compel women to go through Responsions and the other examinations from which they are now exempt. There are some who think that this will be injurious to their interests. The most that can be said in the case of those who wish to read Natural Science is, that it will compel them to learn Latin and Greek either before they come to Oxford, or after they have come up. If the latter, they will find themselves obliged to keep four years residence, which most do not as things now are. If they know enough Latin and Greek to pass Responsions before coming into residence, their case will not be altered, for a woman competing for honours in one of the final subjects in the Honour School of Natural Science always passes the preliminary examinations required by the statutes in the case of men. It is not proposed that the strict B.A. course should be obligatory on all women students. Those who do not wish totake up Latin and Greek, but wish to read Natural Science or another subject such as History, will be allowed to do so under existing regulations, and so may escape Responsions; but they will also have to forego the distinction of the degree.

CAMBRIDGE.—St. John's College has made arrangements for the admission of post-graduate students desiring to pursue a course of advanced study or research under the new regulations of the University. Until the statutes now before the Privy Council are approved, candidates for admission are required to present a letter of recommendation from the Professor or other teacher under whom they propose to work in Cambridge. Further particulars may be learned on application to one of the tutors of the College.

Mr. J. N. Langley, F.R.S., Lecturer in Physiology, has been approved for the degree of Doctor of Science.

T.R.H. the Grand Duke of Hesse and Prince Henry of Prussia have presented to the Museum of Zoology the skeleton of a wild boar.

The following have been appointed Electors to the undermentioned professorships: Chemistry, Prof. Thomson; Plumian (Astronomy), Sir G. G. Stokes; Anatomy, Downing (Medicine), Surgery, and Pathology, Prof. Foster; Botany and Physiology, Prof. Allbutt; Geology, Dr. Phear; Mineralogy, Prof. Liveing; Zoology, Mr. J. W. Clark; Experimental Physics, Prof. Clifton; Mechanism, Mr. Horace Darwin.

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A MEETING was held at Cardiff last week to start a public subscription in aid of the erection of new buildings for the University College of South Wales. A sum of £20,000 is required to meet the conditional grants made by the Treasury and the Drapers' Company. Contributions amounting to £13,000 were promised at the meeting. Lord Windsor, who presided, will contribute £2500, and a substantial sum has also been promised by Lord Tredegar. It is expected that £30,000 will be raised. Mr. Alfred Thomas, M.P., contributes £1000, and Mr. John Cory a like amount.

*Science* announces the following gifts to education in America: The University of Pennsylvania has received a gift of 5000 dols. from Mr. Charles M. Swain, and of 5000 dols. anonymously, the money to be used without restrictions. The will of the late Martin Brimmer, of Boston, to take effect on the death of his wife, bequeaths 50,000 dols. to Harvard University. Ground has been broken for the first of the four buildings of the new biological school of the University of Chicago, which is to be erected with part of the 1,000,000 dols. recently given by Miss Culver. It is proposed to erect special buildings for zoology, botany, anatomy, and physiology, instead of one biological building, as planned before the receipt of Miss Culver's gift.

PRINCIPALS of Technical Schools and others who assist in deciding the character of instruction in chemistry, would do well to take to mind the lesson contained in the following extract, referring to the work of the Chemical Department, from the programme just received from the Central Technical College: "The object aimed at in this part [first year] of the course will be to encourage habits of accuracy and thoughtfulness, and to teach the art of experimenting with a logical purpose rather than to impress mere facts. . . . As soon as students have acquired the necessary proficiency as analysts and sufficient skill in preparing pure substances, they will be encouraged to undertake an original investigation, in order that they may learn to apply their knowledge, as well as develop their powers of observation and reasoning: and thus become fitted to solve problems which are continually presenting themselves in practice, and to improve and advance the industry with which they may be connected. The importance to students of thus devoting themselves, sooner or later, to the higher branches of chemistry cannot be too strongly insisted on; in no other way is it possible for them to acquire the breadth of view and the power of grappling with new problems, as they arise in practice, which are required of the technical chemist."

DR. H. E. ARMSTRONG has been for some time trying to instil a little scientific spirit into the School Board for London. In an address recently delivered at the Borough Polytechnic Institute, and printed in full in the *Technical World*, he described the excellent results attained by the introduction of the scheme of instruction in scientific method, drawn up by a Committee of the British Association. The Board has every reason to be proud of what its science demonstrators have done to promote the reformed methods of science instruction, of which Dr. Armstrong is the most active exponent. The methods have been proved to be practicable, and the results obtained by following them are most satisfactory. It remains for the School Board to recognise this by extending to all its schools in the metropolis (girls' as well as boys' schools) the teaching which has been so successfully carried on in one of its districts. If that were done, a great advance in education would be assured. Those who are engaged in the work of technical education are agreed, as Dr. Armstrong pointed out, that it is all but impossible at the present time to give true technical education in this

country, owing to the extraordinary defective condition of our preliminary school training. But if children in elementary schools were taught to appreciate the main principles of scientific method, it would be possible for them afterwards to properly avail themselves of the higher training which is offered to them, and which alone can render them competent as industrial and domestic workers. It is to be hoped, therefore, that the School Board will see its way to extending the work of scientific education begun under its auspices six years ago.

IN a preliminary report recently prepared for the Technical Education Board of the London County Council, Dr. C. W. Kimmins gives the following statistics to show the progress that has been made, especially in the teaching of physics and chemistry, in the secondary schools assisted by the Board.

| | 1893-4. | 1894-5. | 1895-6. |
|---|---|---|---|
| Number of pupils receiving theoretical instruction in physics ... ... | 1867 | 1899 | 2266 |
| Number of pupils doing practical work in physics ... ... ... | 215 | 433 | 1576 |
| Number of pupils receiving theoretical instruction in chemistry ... | 2091 | 2287 | 2647 |
| Number of pupils doing practical work in chemistry... ... ... | 630 | 1101 | 1814 |
| Percentage of those receiving theoretical instruction in physics, taking practical work in this subject ... ... ... ... | 11·5 | 22·9 | 69·5 |
| Percentage of those receiving theoretical instruction in chemistry, taking practical work in this subject ... ... ... ... | 30·1 | 48·1 | 68·5 |

Dr. Kimmins points out that the statistics show that there has been a general advance in the number receiving instruction in experimental science at these schools, and that the proportion doing individual practical work has increased to a far greater extent. He reports that the general introduction of practical teaching in elementary physics is producing excellent results. A marked improvement is also to be noticed in the teaching of chemistry; the practical work is of a much more rational kind, and bears a closer relation to the class teaching. Qualitative analysis is rapidly ceasing to occupy the important position it has held in the laboratory in former years.

## SCIENTIFIC SERIALS.

THE *Journal of Botany* commenced its enlarged issue with the present year, and the two numbers already published indicate that its editor will have no difficulty in filling its pages with matter of value to the English botanist. An interesting paper, by Mr. E. A. L. Batters, describes several new British seaweeds, including two new genera, *Colaconema* and *Trailliella*, both belonging to the *Florideæ*. Mr. J. H. Burkill contributes a paper on the variation in the number of parts of the flower of *Parnassia palustris*. Mr. A. H. Praeger proposes a division of Ireland into botanical districts, accompanying his paper by a map. There are a number of other papers on various departments of descriptive botany. The plates illustrate two new forms of British pond-weed described by Mr. A. Fryer, and new African plants described by Mr. A. B. Rendle and Mr. E. G. Baker.

*Bulletin of the American Mathematical Society*, vol. ii. No. 3, December 1895.—Prof. F. Morley, in a notice of Gundelfinger's Vorlesungen aus der Analytischen Geometrie des Kegelschnitte, classes it with two other recent analytic works on conic sections, for which one is very thankful; the other two are the works by the late Prof. Casey and Miss Scott. He states the plan of Gundelfinger's treatise to be to systematically develop the theory by means of homogeneous coordinates, while bringing out the fact that the elementary $(x, y)$ system is merely a case to which we can descend when so minded. This latter may seem a minor point; pedagogically it is not so, and it is certainly not well explained in many books. The development of the theory is really analytic, though one feels that the analysis is under the control of a masterly geometric insight. Prof. Morley's review is a long one, and enters into many details of the work which has been edited by Dr. Dingeldey. Short notes follow, viz. on divergent series, by Prof. A. Chessin, and a simple proof of a fundamental theorem of substitution groups, and several applications of the theorem, by Dr. G. A. Miller.—Dr. James Pierpont contributes an interesting note on an undemonstrated theorem of the *Disquisitiones Arithmeticæ*. This ends with two theorems relating to the construction of a polygon of $n$ sides by a series of *rational* conics, *i.e.* conics whose coefficients are rational in the current domain of rationality, and gives in three rows the polygons, constructible by rule and compass, known to the Greeks (twenty cases); then the polygons of this class discovered by Gauss (five cases); and, in the last row, the *additional* polygons which can be constructed when *rational* conics can be employed (thirty-five cases). The table is limited to constructible regular polygons of sides $\leqq 100$.—Notes and new publications close the Number.

*Bollettino della Società Sismologica Italiana*, vol. i. 1895, No. 7.—Ernesto von Rebeur-Paschwitz, by A. C.—The first instant of the great earthquake-shock of May 18, 1895, noted in Arcetri (Florence), by A. Abetti.—On the Florentine seismic centre, by M. Baratta. A topographical discussion of the three principal earthquakes felt in the neighbourhood of Florence in the present century, those of 1812, 1887, and 1895. The centres of the meizoseismal zones, though very near one another, are not quite coincident; but this, it is suggested, may be due to a variation in the depth of focus, or in the intensity of the original disturbance.—Notices of earthquakes felt in Italy (May–June 1895), by M. Baratta. The most important are the Florentine earthquake of May 18, the Spoleto earthquake of May 20, and the Rovigo earthquake of May 25.

## SOCIETIES AND ACADEMIES.

### LONDON.

**Chemical Society**, January 16.—Mr. A. G. Vernon Harcourt, President, in the chair.—The following papers were read:—The acetylene theory of luminosity, by V. B. Lewes. The adverse criticism of the acetylene theory of luminosity by Smithells does not affect the considerations upon which the theory is based; these are (1) that the unsaturated hydrocarbons in the inner region of the flame are largely converted into acetylene before luminosity commences; (2) that pure acetylene develops luminosity when flowing through a heated tube; (3) that the temperature necessary to decompose acetylene with evolution of light does not raise to incandescence the liberated carbon; and (4) that in luminous hydrocarbon flames of sufficiently high temperature, the luminosity varies directly with the amount of acetylene present at the point where luminosity commences.—The action of sodium alcoholate on certain aromatic amides, by J. B. Cohen and W. H. Archdeacon. Many of the aromatic amides form addition compounds with sodium meth- or eth-oxide; thus, acetanilide yields a substance of the composition PhNHAc, MeONa.—Note on the electrical conductivity of formanilide and thioformanilide, by T. Ewan.—The action of sugar on ammoniacal silver nitrate, by J. Henderson. A definite factor can be assigned expressing the action of glucose, lævulose, and galactose on ammoniacal silver nitrate under standard conditions, but no such factor can be obtained in the case of lactose or maltose, owing to secondary reactions. Cane-sugar, starch, and dextrin do not act on the ammoniacal solution under the standard conditions.—Solution and diffusion of certain metals in mercury, by W. J. Humphreys.—On some of the ethereal salts of active and inactive monobenzoyl, dibenzoyl, diphenylacetyl, and dipropionyl glyceric acids, by P. Frankland and J. MacGregor. The physical properties of these salts have been determined, and the relation between the rotatory power and the constitution of glyceric acid derivatives is discussed.—On the rotation of optically active compounds in organic solvents, by P. Frankland and R. H. Pickard. As a result of cryoscopic and rotatory power determinations of methyl dibenzoylglycerate and ethyl diacetylglycerate in various solvents, the authors find that when the substance has a low molecular weight, the specific rotation is high, and *vice versâ*; the bearings of these results are discussed.—Note on the action of hydrogen chloride on ethyl alcohol, by J. C. Cain.—Transformation of the alkylammonium cyanates into the corresponding ureas, by J. Walker and J. R. Appleyard. Measurements of the rates of transformation of the alkylammonium cyanates into ureas, and *vice versâ*, indicate that the cyanates are dissociated into two ions in aqueous solution. On certain phenylthiocarbamates, by H. L. Snape.—The available potash in soils, by T. B. Wood.