in tree-trunks near Simla. Baini Prashad describes the microscopical structure of the halteres in mosquitoes, and discusses their use, believing that the equilibrating sense is the only function certainly attributable to the organs, which appear to have no connection with sound production or stridulation. The same author gives an account of the internal male organs in several mosquito genera. A paper of very considerable importance by P. R. Awati, entitled "Studies in Flies, II.," contains descriptions of the genital armature in several Muscid genera as compared with those of other Diptera, illustrated by nineteen clearly drawn plates. The author points out that ten segments may be represented in the abdomen of the higher Diptera, confirming the view put forward by G. H. Carpenter and T. R. Hewitt in their account of the reproductive organs of warble-flies (Hypoderma) published in 1914 (Sci. Proc. R. Dublin Soc., vol. xiv., No. 19). Mr. Awati attempts to co-ordinate the inconveniently divergent terminology which has grown up in connection with the male armature of flies studied by various writers.

The important families of the Tabanidæ and Therevidæ are dealt with in part ii. of A. White's monograph of the Diptera-Brachycera of Tasmania (Proc. R. Soc. Tasmania, 1915, pp. 1–59).

In the *Journ. Agric. Research* (vol. v., No. 12) D. G. Tower writes on the "Biology of *Apanteles militaris*," a parasite of the noctuid moth, *Heliophila* (or *Leucania*) *unipuncta,* the caterpillar of which is notorious in North America under the name of "army worm"; he describes the outlines of the embryonic development, the hatching of the larva, and its various stages. The whole life-history occupies about twenty-five days. Parthenogenesis may occur; all the offspring of virgin females appear to be males. The author discusses the function of the curious embryonic outgrowth of the hind-gut, known as the "caudal vesicle," and agrees with the view of R. Weissenberg *(Sitzb. Gesellsch. naturf. Freunde,* Berlin, 1901, 1) that it is a temporary organ of excretion.

Prof. Vernon L. Kellogg and Gordon F. Ferris publish, in the Stanford University Series (California), some valuable notes on the Anoplura and Mallophaga of North American mammals. They point out that the systematic study of the Anoplura has been markedly neglected, and furnish a diagnostic table of families and genera which will prove useful to students. The importance of these blood-sucking insects as transmitters, and possibly as alternate hosts, of Protozoa causing disease in mammals is naturally emphasised.

Students of economic entomology and of sacred history will alike be attracted by John D. Whiting's article on a recent plague of locusts near Jerusalem in the *National Geographic Journal* (Washington, vol. xxviii., No. 6). This article gives a vivid description of the locust swarms and the damage done by them to vegetation; it is illustrated by a most remarkable series of photographs.   G. H. C.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—A party of sixteen professors from various universities in France has lately visited Oxford. They received a cordial welcome, and were given ample opportunities of observing the effect of the war upon the life of the University.

Prof. A. Schuster has been appointed Halley lecturer for 1917.

Owing to circumstances connected with the war the election of a reader in geography is postponed until further notice.

By the will of the late Miss C. E. Beckwith one-half of the residue of her estate, which amounts to about 8000*l.*, is bequeathed to the Victoria University of Manchester in aid of the "John Henry Beckwith Scholarship," founded by her mother.

Science announces that by the will of the late Mr. C. W. Harkness Yale University will receive 100,000*l.* and the Harkness Fund for scientific and educational work 50,000*l.* It is also announced that a bequest of 30,000*l.* has been made to the Johns Hopkins University by Miss Jessie Gillender for the purpose of instituting organised research into the problem of epilepsy.

SOME months ago the German authorities removed to Germany as prisoners two professors of the University of Ghent, Messrs. Frédéricq and Pirenne, against whom no charge was made and no reason was given. The Dutch Government afterwards approached the German Government with the view of obtaining their release; and now a memorial has been sent with the same object to the Berlin Academy of Sciences, to other German academies and learned societies, to the senates of the German universities, and individually to a large number of German professors. There are nearly 200 signatories, all professors in Dutch universities or members of the Academy of Sciences of Amsterdam, and the list includes many of the best-known names of Dutch science. The memorialists call upon their German colleagues to obtain from the Government permission for Profs. Frédéricq and Pirenne to proceed to Holland, in order to continue their studies there. They are convinced that a refusal would seriously disappoint a large part of the Dutch nation.

UNDER the title, "Om Børns Idealer," Dr. A. Lehmann has published *(Kgl. Danske Videnskabernes Selskabs Forhandlingen,* 1916, No. 2, pp. 107) an illuminating analysis of the replies given by 4602 Danish children to the question, "What person would you wish to be like, and why do you prefer the model you have chosen?" The subjects of the inquiry were selected from five distinct types of schools, and included boys and girls of all ages from eight to sixteen. Many interesting points are brought out—for example, that although parents and other personal acquaintances fail badly to maintain their original position as the heroes of childhood, they tend to be rehabilitated in the esteem of the adolescent. Taking the results as a whole, the curves showing the preferences of the two sexes for persons, virtues and accomplishments fall rather widely apart. In a final section of the paper the author seeks to determine the influence of co-education upon the course taken by these curves, and shows that it represents something much more positive than a mere tendency to bring the views of boys and girls closer together.

DURING the past year the sub-committee on research funds of the Committee of One Hundred of the American Association for the Advancement of Science has tried to secure information regarding research funds in the United States, and particularly such as are available without substantial limitations as to the residence and so on of the person receiving the grant. A list of the more important endowments to which no restrictions are attached, with the exception of those devoted to medical research, has been prepared, and is published in the issue of *Science* for May 12. The total capital value of these endowments is 4,603,150*l.*, and those funds where the endowment reaches 5000*l.* or more are as follows:—The Carnegie Institution, 4,400,000*l.*; the Smithsonian Institution, 50,000*l.*; the Engineering Foundation Board, New York City,

40,000*l.*; the National Academy of Sciences, 30,640*l.*—including the Bache Fund, 11,200*l.*, and the Watson Fund, 5000*l.*; the American Association for the Advancement of Science, 20,000*l.*, made up of the Colburn Fund of 15,000*l.* and the General Research Fund of 5000*l.*; the American Academy of Arts and Sciences, 15,760*l.*, made up of the Rumford Fund of 13,260*l.* and the C. M. Warren Fund of 2500*l.*; the California Academy of Sciences, 13,000*l.*; Harvard College Observatory Advancement of Astronomical Science Fund, 8000*l.*; the National Geographic Society Fund for Exploration and Geographical Research, 7000*l.*; the Elizabeth Thompson Science Fund, 5200*l.*; and the Archæological Institute of America, Washington, 5000*l.*

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 1.—Sir J. J. Thomson, president, in the chair.—Prof. H. M. **Macdonald**: The transmission of electric waves around the earth's surface. A formula is obtained for the magnetic force at any point of the earth's surface supposed imperfectly conducting when the source is a simple oscillator normal to its surface. If $\eta = (r/2\lambda V)^{\frac{1}{2}}$, where σ is the specific resistance of the earth at its surface, V is the velocity of radiation in the space outside the earth, λ is the wave-length of the oscillations, and $z = (2\pi a/\lambda)$, where a is the earth's radius, it appears that, when ηz is a small quantity, the effect of imperfect conduction is to increase the magnetic force at a distance from the oscillator, the ratio of the magnetic force in this case to the magnetic force when the conduction is perfect increasing with the distance from the oscillator and diminishing with increasing wave-length. When squares and higher powers of $\eta z^{\frac{1}{2}}$ are neglected, the results at angular distances from the oscillator of 6°, 9°, 12°, 15°, 18° for a wave-length of five kilometres agree with those derived from Love's results when the square of k/m is neglected. The effect of the terms involving squares of $\eta z^{\frac{1}{2}}$ is opposite to that of the first order terms. Values of the ratio are calculated from the general formula for wave-lengths of five kilometres and two kilometres, for a wave-length of five kilometres the ratio increases almost uniformly from 1·004 at an angular distance of 6° to 1·027 at 18°, and for a wave-length of two kilometres from 1·106 at 6° to 1·082 at 18°.—Prof. W. M. **Hicks**: A critical study of spectral series. Part IV.—The structure of spark spectra. The communication deals with the nature of the structure of spark spectra, using for this purpose the spectra of silver and gold. It is found that practically the whole of a spectrum in each case is built on a similar plan. Lines differ from other lines by constant differences of wave number called links, and sets of lines are connected by these links into chains or linkages attached each to one of the ordinary series lines. These links depend on successive Δ-displacements on the series limits, where Δ is the displacement which gives the doublet separation, all of which may be calculated from data already known. The discussion is confined only to displacements on the p and s sequences. Those depending on the d sequences exist, but their discussion is postponed.—K. **Terazawa**: Periodic disturbance of level arising from the load of neighbouring oceanic tides. In Hecker's observations on the lunar deflection of gravity the force apparently acting on the pendulum at Potsdam is a larger fraction of the moon's direct attraction when it acts towards east or west than when it acts towards north or south. A similar result has been found by Michelson in his observation of the lunar perturbation of water-level at Chicago. A calculation is here made to ascertain to what extent the tilting of the ground caused by the excess pressure of the tide in the North Atlantic is important for the explanation of this geodynamical discrepancy. Replacing the North Atlantic by a circular basin of radius 2000 km., taking the position of Chicago to be 1000 km. from the coast, and the rigidity of the earth to be 6×10^{11} c.g.s., it is found that the attraction effect of a uniform tide per metre of height is about 0·0024″, while its tilting effect is as much as 0·0069″, the maximum of the direct lunar attraction being 0·017″. If the surface of tide is ellipsoidal, shelving towards the coast, nearly the same result is reached for the same mean tidal height.—E. B. R. **Prideaux**: The use of partly neutralised mixtures of acids as hydrion regulators. It has been shown that mixtures of acids have certain advantages over single acids which have been hitherto used for hydrion regulators. The principle of inserting the acids required to make the neutralisation graph more nearly linear should be capable of wide application. A mixture of phosphoric, acetic, and boric acids has been investigated, the (H′) values tabulated, and details given for the reproduction of these as standards. They were found to possess the advantages predicted.—Dr. E. A. N. **Arber**: The fossil floras of the Coal Measures of South Staffordshire. A flora of fifty-eight species is described from a new horizon in South Staffordshire, the Red Clay Series, or Old Hill Marls, of Transition Coal Measure age. A new genus, Calamophloios, and new species of Sphenopteris and Cardiocarpus are described, as well as several records new to this horizon. Ten new records are added to the known flora of the Productive Series (Middle Coal Measures), including new species of Calamites and Lepidostrobus. A large number of additional records from new localities or horizons are added in respect to fossils already known from these beds.

Faraday Society, May 9.—Sir Robert Hadfield, president, in the choir.—E. **Hatschek**: An analysis of the theory of gels as systems of two liquid phases. The generally accepted theory of the constitution of gels is that they are systems of two liquid phases. No attempts have been made to determine whether this assumption accounts for various observed properties of gels. The present paper is a mathematical investigation directed to determining whether the observed elastic properties of gels are compatible with their being composed of two liquid phases only, and it is concluded that this theory is untenable.—F. C. **Thompson**: The properties of solid solutions of metals and of intermetallic compounds. By considering the space-lattice of a solid solution of two metals as resulting from the substitution of atoms of B for an equal number of A in the space-lattice of the latter, it is possible to predict with some completeness the properties, hardness, specific volume, and electrical resistance of the alloy.—F. C. **Thompson**: The annealing of metals. After briefly considering the structural changes induced in metals and simple alloys by such processes as rolling or wire drawing, as a result of which the crystalline elements remain unchanged in hardness, the conditions governing such mechanical treatment of metals are examined.—Z. **Jeffries**: Grain size measurements in metals, and importance of such information. The author's method for measuring grain size consists in counting the grains completely included and partly included in the circular portion of an image of the specimen of standard magnification, and by means of an empirical formula determining therefrom the equivalent number of whole grains in the standard area.—Dr. F. J. **Brislee**: The changes in physical properties of aluminium with mechanical work. II.—Specific heats