Trilobites is due to direct descent, or is a case of convergence, cannot here be discussed.

We shall wait with impatience for further details of these important discoveries, inasmuch as there seems great promise that the soft black shale to which we owe the fine preservation of the antennæ has also preserved for us further details of the organisation of these interesting fossils. The fragments of limbs shown in the drawings make us eager for more.

H. M. BERNARD.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

AN influential and well-attended Conference on Secondary Education was opened on Tuesday in the Examination Schools, Oxford. The subjects considered were the need of various types of secondary education in England, with special reference to (1) the curricula and gradation of first grade schools (classical and modern), second grade schools, and higher grade board schools respectively; (2) the provision of preparatory schools for the upper grade of secondary schools; and (3) the relation between secondary schools and the Universities.

MR. A. AUSTEN LEIGH, Provost of King's College, Cambridge, was admitted Vice-Chancellor on September 30. Dr. Peile, in resigning office, commented on the events of the University year. He called special attention to the straitened finances of the scientific departments, and trusted that help might be obtained from external sources. The departments of Engineering, Geology, Astromony, and Pathology appear to be those most urgently in need of additional resources. The Senate would be asked to appoint a syndicate for conducting Examinations in Agricultural Science, being strongly moved thereto by the County Councils and the Royal Agricultural Society. The Galileo Tercentenary at Padua, the Harvey Centenary in Cambridge, and the appointment of Mr. H. Y. Oldham as University Lecturer in Geography, in the room of Mr. Buchanan, were sympathetically referred to.

MR. R. A. SAMPSON, Fellow of St. John's College, and Isaac Newton Student in Astronomy, Cambridge, has been appointed Professor of Mathematics in the Durham College of Science, Newcastle.

A NEW course of lectures on "The Physiology of the Special Senses, chiefly the phenomena of Vision," will be given this term by Dr. W. H. R. Rivers, of St. John's College, Cambridge, beginning on Monday, October 16. The lectures will be accompanied by practical work in the Psychophysical Laboratory.

THE Technical Instruction Committee of the Bolton County Council has issued a syllabus of day and evening classes for the session 1893-4. The youth of Bolton can obtain instruction in many of the arts and most of the sciences at their Technical School, and judging from the well-equipped workshops illustrated in the syllabus, excellent courses of manual training are given.

THE Entrance Scholarships in Science at St. Bartholomew's Hospital have recently been awarded. The scholarship of £75 in biology and physiology has been given to E. C. Morland, of Owens College, Manchester; the scholarship of £75 in chemistry and physics has been gained by R. H. Bremridge; the junior open scholarship of £150 in biology, chemistry, and physics has been gained by H. A. Colwell; and the preliminary scientific exhibition has been awarded to J. E. Robinson. The Jeaffreson exhibition in classics and mathematics has been gained by G. V. Bull.

A DIGEST of the University Extension Science Lectures, to be delivered this autumn, shows that the movement is doing good work in many parts of the country. In connection with the Cambridge University Extension Syndicate, nine courses will be delivered on Botanical subjects, seven on Natural History, seven on Hygiene and kindred matters, six on Chemistry, and two on the History of Science, while single courses have been arranged in Agriculture, Electricity, and Geology. The programme of the London Society for the Extension of University Teaching shows six courses on Chemistry, four on Astronomy, three on Geology, and the same number on Hygiene. The Oxford University Extension Delegacy have made arrangements for the delivery of sixteen courses on Chemistry, twelve on Hygiene, nine on Agriculture, four on Astronomy, three on Geography, three on Geology, two on Electricity, two on Physiography, one on Light, and one on the Forces of Nature.

SCIENTIFIC SERIALS.

THE *American Meteorological Journal* for August contains an important investigation on the movements of the air at all heights in cyclones and anticyclones, as shown by cloud observations made at Blue Hill Observatory. A record was made of the kind of each cloud visible, its direction of motion and relative velocity, and the observations, classified into five levels, were plotted by means of arrows on maps prepared for the purpose. The increased velocity of the wind near the centre of the cyclone and the decreased velocity near the centre of the anticyclone are distinctly shown. The arrows also show that the inclination of the wind to the centres of the two is not the same on all sides. In the cyclone the winds blow most nearly tangential south-east of the centre, and most nearly inward north or north-east of the centre; while in the anticyclone the winds are most tangential north-west of the centre, and most nearly outward south or south-east of the centre. In the cumulus region the cyclonic and anticyclonic circulation are still visible, but the general westward drift has become much stronger, while above that region that circulation is entirely masked by the drift. The diagrams also show that the currents do not all turn to the right as one ascends into the atmosphere, as is usually stated; when the winds have a northerly component, they show that the currents turn to the left as one ascends. The tables show that the circulation of the air is much more rapid in the higher regions than near the earth's surface, both in cyclones and anticyclones.

Bulletin de l'Académie Royale de Belgique, No. 8.—Determination of the constant of aberration, of the parallax of Polaris, of the velocity of the solar system, and of the constants of diurnal nutation, by means of the latitude observations of Gyldén and Peters at Pulkowa, by F. Folie. A further discussion of the evidence for diurnal nutation claimed as discovered by the author, and other deductions from the Pulkowa latitude observations. Among the latter is the R.A. of the apex of the sun's way, 277°, the positive parallax of 0″·05 for Polaris, and the negative correction for the constant of aberration, 0″·037, which harmonises the velocity of light and the parallax of the sun.—Correct determination of the constant of aberration by observations in the prime vertical, by the same author. This shows that the accepted formula for the reduction of prime vertical observations is faulty, and substitutes a corrected one.—Researches on the mono-carbon derivatives, by Louis Henry. This portion of the researches contains a preliminary account of the ammoniacal derivatives of methyl aldehyde.—On a simple method of measuring retardation in minerals cut in thin plates, by G. Cesaro. A compensating quartz prism is placed between the microscope and the mineral, and moved across the field by means of a screw permitting a displacement of 0·05 mm. The tints utilised for the determination of the amount of retardation experienced by the extraordinary ray are those known as sensitive tints, which easily change from a bluish to a reddish violet.—On the nutrition of the echinoderms, by Marcelin Chapeaux. The author maintains that the amibocytes of the cœlomic cavity of starfishes play an important part in the continuation of the process of digestion originated by the radial glands. Small drops of the oils emulsified by the radial glands traverse the epithelium and enter the body cavity. They are then absorbed by the amibocytes, and their duplication is carried out in the interior of these phagocytes, under the influence of an acid ferment.

Bulletin de la Société des Naturalistes de Moscou, 1892, No. 4.—Contributions to the fauna of the Aral Steppes, by A. Nikolsky. List of mammals and birds collected or noticed in the Steppes, with very short remarks.—*Astragalus Uralensis*, a new species, by D. Litwinow.—On the cold of January, 1893, note by B. Sresnewskij.—To the memory of N. I. Koksharoff and A. W. Gadolin, by W. Vernadsky. An excellent summary of Gadolin's work.

1893, No. 1.—On some ecto- and ento-parasites of the Cyclopides, by Dr. W. Schewiakoff (with a plate). A new species, *Trichophrya cordiformis*, is described, also the ento-parasitic slimes of the cyclopides.—On the anatomy of *Siredon pisciformis*, by W. Zykoff (with a plate).—Notes on a new skull of *Amynodon*, by Marie Pavloff (with a plate). The skull has been received from America, and was found in the miocene of the Black Hills, South Dacota.—Catalogue of Lepidoptera of the Government of Kazan (third paper), by L. Krulikovski, containing the Noctuæ.—On the molecular

forces in the chemically simple bodies, on the basis of thermodynamics, being the third part of a remarkable memoir by J. Weinberg.—On the development of the ocean, by Prof. H. Trautschold. An attempt to prove that the ocean, at its first appearance, must have been very poor in chlorides as well as in carbonates and other salts.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 2.—M. Lœwy in the chair.—On the Serpent d'eau of the Rhône at Geneva, by M. H. Faye. This paper contains a description of a peculiar phenomenon seen at a weir near Geneva. It is a species of whirl in a vertical plane produced by a recoil of the water from the top of the barrier to a distance of 1·5 m. The axis of the whirl is horizontal, and parallel to the barrier. A delicate experiment performed by the late M. Colladon proved that this "serpent" exercises in its interior a considerable aspiration or suction. The phenomenon is complicated by the superposition of another whirl round a vertical axis in the neighbourhood of places where the barrier is interrupted, and the water is allowed a free fall. In these places conical tubes are formed whose apices descend to the bottom of the river, and into which air is noisily precipitated. Light objects—wood, paper—thrown into the whirlpool, descend, turning upon themselves with extraordinary speed. The whole phenomenon is very transitory and unstable. M. Faye does not share M. Colladon's view that the phenomenon is analogous to an ascending tornado. It has no analogy to a tornado, although it essentially requires a descending whirl for its production.—Observations of the comet Rordame-Quénisset, made with the great equatorial of the Bordeaux Observatory, by MM. G. Rayet, L. Picart, and F. Courty.—Values of the magnetic elements determined by the polar expedition of the Imperial Russian Geographical Society to the mouth of the Lena, by M. le Général A. de Tillo. The values for the magnetic elements at Sagastyr, as found by Captain Jurgens, are the following :—

Declination	4·7° E.
Dip	83·2°
Horizontal intensity	0·072°

G. Neumayer's map shows the greatest error in the declination, which it gives at 11·0° E.—Influence of the state of the surface of a platinum electrode upon its initial capacity of polarisation, by M. J. Colin. The results of M. Colin's experiments are in agreement with M. Blondlot's proposition that gases, and hydrogen in particular, are the cause of changes in the capacity of a platinum-water surface. If, in conformity with this hypothesis, the presence of hydrogen diminishes the capacity, the capacity of an electrode having served as kathode in the decomposition of water is very small; conversely, that of an electrode which has served as an anode, must be very great, since the oxygen set free must have eliminated the hydrogen with which the platinum might have been charged. Chromic acid, being a powerful oxidiser, must act in the same sense.—The fixation of iodine by starch, by M. G. Rouvier. The weights of starch remaining the same, as well as the other circumstances of the experiment, if the quantity of iodine added is increased, the quantity fixed rises at first. If the iodine is employed in sufficient quantity a compound is obtained whose percentage of iodine is always near 19·6, corresponding to the formula $(C_6H_{10}O_5)_{16}I_5$. A higher percentage was never obtained. If the weights of iodine and starch remain the same, as well as the other circumstances of the experiment, and the volume of the mixture increases, the quantity of iodine fixed diminishes, on condition that no more iodine is employed than is necessary to obtain the percentage 19·6. Otherwise, the volume may increase, and yet this percentage may be obtained.

SYDNEY.

Royal Society of New South Wales, August 2.—Prof. T. P. Anderson Stuart, President, in the chair.—The following papers were read:—Notes on the Bingera diamond field, by Rev. J. Milne Curran.—On the occurrence of a chromite-bearing rock from the Pennant Hills Quarry, near Paramatta, by W. F. Smeeth, J. A. Watt, and Prof. T. W. E. David.—Note on the occurrence of barytes at the Five Dock Sandstone Quarry; and note on the occurrence of calcareous sandstone allied to Fontainebleau sandstone from Rock Lily, near Pittwater, by Prof. T. W. E. David.

Linnean Society of New South Wales, August 30.—Prof. Haswell, Vice-President, in the chair.—The following papers were read:—Notes on Australian Coleoptera, with descriptions of new species, part xiv., by Rev. T. Blackburn.—Note on *Colina Brazieri*, Tryon, by Prof. Ralph Tate.—Descriptions of some new species of *Araneidæ* from New South Wales, No. iii. by W. J. Rainbow.—Notes on aboriginal stone weapons and implements, No. xviii.-xx. by R. Etheridge, Junr.—Three additional types of womerah, or throwing-stick, by R. Etheridge, Jun.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—A Manual of Telephony: W. H. Preece and A. J. Stubbs (Whittaker).—The Principles of Fitting: A Foreman Pattern Maker (Whittaker).—Dissections Illustrated: Part 2, C. G. Brodie, (Whittaker).—An Elementary Text-book of Coal Mining: R. Peel (Blackie).—Biologia Centrali-Americana, Part 3, Text and Plates, Archæology; Part 4, Plates, Archæology: A. P. Maudslay (Porter).—Selections from the Philosophical and Poetical Works of Constance C. W. Naden: compiled by E. and E. Hughes (Bickers).—Our Reptiles and Batrachians, new edition: Dr. M. C. Cooke (W. H. Allen).—The Zambesi Basin and Nyassaland: D. J. Rankin (Blackwood).—Some Salient Points in the Science of the Earth: Sir J. W. Dawson (Hodder and Stoughton).—A Text-book of Physiology. 7th edition, Part 1: Dr. M. Foster (Macmillan).—The "Thumb" Prayer-book (Frowde).—Marine Boiler Management and Construction: C. E. Stromeyer (Longmans).—An Elementary Text-book of Agricultural Botany: M. C. Potter (Methuen).—Pêches et Chasses Zoologiques: Marquis de Folin (Paris, Baillière).—Lectures on the Comparative Pathology of Inflammation: E. Metchnikoff, translated by F. A. Starling and Dr. E. H. Starling (K. Paul).—Machine Drawing: T. Jones and T. G. Jones (J. Heywood).

PAMPHLETS.—The Upper Hamilton and Portage Stages of Central and Eastern New York: C. L. Prosser.—The Climate of Chicago: H. A. Hazen (Washington).—Mikroskopische Vivisektion: Dr. A. Gruber (Freiburg).—Restoration of Coryphodons: O. C. Marsh.—Massachusetts Institute of Technology, a Register of Publications of the Institute, &c. 1862–93, 3rd edition (Boston).

SERIALS.—Gazzetta Chimica Italiana, Anno xxiii. 1893, Vol. 2, fasc. 9 (Palermo).—Engineering Magazine, October (New York).—Observatory, October (Taylor and Francis).—Popular Astronomy, September (Wesley).—Himmel und Erde, October (Berlin).—L'Astronomie, October (Paris).—Journal of the Chemical Society, October (Gurney and Jackson).—Journal of the Statistical Society, September (Stanford).

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