count." "I am a determined opponent of what I think may fairly be termed the *nonsensical hypothesis of ionic dissociation* (italics ours), for there is no other appropriate term for a view which asserts that hydrogen chloride and a few other compounds are so loosely strung together that they fall to pieces when dissolved in water; out of sheer fright, it would seem, as no valid motive is suggested for such self-sacrifice; and no such charge of unprincipled levity of conduct is brought against the vast majority of compounds other than a few acids and alkalies." If there are others who oppose the theory as strongly as Prof. Armstrong, they at least have not the temerity to attack it so boldly in the face of its tacit general acceptance in the chemical world.

In the December Journal of the American Chemical Society, George F. Payne discusses the mineral constituents of the watermelon. He finds in the ash over sixty per cent. of potash and ten per cent. of phosphoric acid; hence the need of fertilizers containing a large quantity of potash.

J. L. H.

ASTRONOMICAL NOTES.

We have received a new book on the determination of planet and comet orbits by Dr. Karl Zelbr. It contains 125 octavo pages, and is reprinted from the first volume of Valentiner's *Handwörterbuch der Astronomie.* It will doubtless be found a very useful text-book of the subject.

The *Astronomical Journal* of December 10th contains a series of observations of the companion of Sirius made at Washington last March by Prof. Stimson J. Brown. At the time of making these observations Prof. Brown did not consider them entitled to very much confidence, on account of the extreme difficulty experienced in seeing the companion so near the principal star. It is now evident, however, from the later observations at the Lick Observatory, that the Washington observations are correct, and that the object seen by Prof. Brown was really the companion.

In the *Astronomische Nachrichten* of December 14th Prof. E. C. Pickering has a note on a method of determining the relative motions of stars in the line of sight by means of spectra photographed through an objective prism. The plan consists of making a pair of photographs of the same region near the meridian in reversed positions of the telescope. As the reversal of the telescope turns the spectra 180°, we can measure on the photographs twice the linear displacement due to the relative motions of any two stars in the line of sight. The second photograph is made through the glass plate, so that the plates may be placed with their films in contact for making the comparisons.

Among recent series of meridian circle observations of which preliminary accounts have appeared in the astronomical periodicals, we notice the following: In the *Astronomical Journal* of December 23rd Prof. Tucker gives a summary of the results of his determinations of fundamental stars contained in the astronomical ephemerides other than the *Berlin Jahrbuch.* In the *Astronomische Nachrichten* of December 22d Prof. Küstner gives his determinations of the *Zusatzsterne* of the *Berlin Jahrbuch* list, made with the meridian circle of the Berlin observatory in the years 1886 to 1891.

H. J.

SCIENTIFIC NOTES AND NEWS.

Gen. Francis A. Walker, President of the Massachusetts Institute of Technology and Vice-President of the National Academy of Sciences, died suddenly on January 5th. He was born on July 2, 1840, and graduated from Amherst College in 1860. He had filled many important positions, having been professor of political economy in the Sheffield Scientific School of Yale University, Chief of the Bureau

of Statistics, Superintendent of the Census and Commissioner of Indian Affairs. Gen. Walker made numerous and valuable contributions to statistics, sociology and political economy.

WE regret also to announce the deaths of Dr. Joseph v. Gerlach, formerly professor of anatomy in the University at Erlangen; of Dr. Charles Heitzmann, the distinguished New York histologist; of Prof. Wm. H. Pancoast, an eminent Philadelphia surgeon; of the Count de Mas-Latre, the author of numerous contributions to paleography; of Mr. W. H. Ward, of Newark, N. J., a student of horticulture; of Mr. Vivian S. Martin, the geographer, and of Sir John Brown, who made important improvements in the manufacture of armor plates and railway supplies.

QUEEN VICTORIA has conferred an honor on the English peerage by making Sir Joseph Lister a lord.

PROF. FRANCIS DARWIN is preparing to publish a supplementary series of Charles Darwin's letters. His projected volume will include a full selection from those letters of a purely scientific interest which he was unable to print in the 'Life and Letters,' as well as from any fresh material that may now be intrusted to him. Those of Darwin's correspondents who have not already done so are requested to allow him to make copies of any letters of his which they possess, even though they are apparently of only slight or restricted interest.

MR. HERBERT SPENCER has consented, in response to a letter signed by a large number of eminent Englishmen, to allow his portrait to be painted and presented to the nation. Mr. Hubert Herkomer has been selected as the artist.

THE Arago medal, so seldom given by the Academy, was this year awarded both to Lord Kelvin and to M. Antoine d'Abbadie.

THE public meeting of the Paris Academy of Sciences on December 21st was of special importance. An address was made by the President, M. A. Cornu, and the prizes of the Academy were awarded. These prizes are very numerous and valuable, and the issue of the *Comptes Rendus* containing the account of their award is of much interest. The grounds of each award is given in detail by an eminent authority, and the hundred pages of the number thus give a valuable summary of the advances in certain departments of science.

THE Royal Geographical Society of London has awarded a special gold medal to Dr. Fr. Nansen and special silver medals to Captain Sverdrup, Lieutenants Scott-Hansen and Johannsen and to Dr. Blessing. The other members of the recent Polar expedition were each awarded bronze medals.

IT is now reported that the large fortune left by Alfred Nobel will be used to endow five international prizes to be awarded annually, one of these for the most important advance in physics, one in chemistry, one in physiology or medicine, one for the best compilation in physiology or medicine, and one for the most important contribution towards the promotion of peace.

MR. JOHN LEIGHTON will present to the Royal Institution, London, his collection of letters and papers by Faraday, which consist chiefly of letters written to Frederick Magrath. Faraday left his personal papers to the Royal Institution, and they now are contained in a special cabinet.

THE trustees of the British Museum have secured the important collection of woodpeckers and other birds formed by the late Mr. Edward Hargitt. The number of specimens of woodpecker alone is nearly 3,600, including all the valuable types described by Mr. Hargitt in his 'Catalogue of the Woodpeckers,' and there are also 2,000 miscellaneous birds.

MRS. COXE has presented the scientific library of the late Eckley B. Coxe to Lehigh University. The collection is rich in complete sets of scientific periodicals and in the transactions of learned societies.

THE foreign papers contain detailed accounts of the interment of Pasteur at the Pasteur Institute on December 26th. His remains had for fifteen months been lying at Notre Dame, where a religious ceremony was held before removing them to the Institute. The crypt, planned by M. Giraud, following the tomb of Galla Placadia at Ravenna, is inscribed with a sentence from Pasteur's reception speech at

the Academy: "Hereux celui qui porte en soi un dieu, un idéal de beauté, et qui lui obéit—idéal de l'art, idéal de la science, idéal de la patrie, idéal des vertus de l'évangile." Brief remarks were made by M. J. B. Pasteur; M. Bertrand, President of the Council; M. Rambaud, Minister of Education; M. Bodin, President of the Municipality; Sir Joseph Lister, representing the Royal Society; Sir Dyce Duckworth, Sir John Evans, Prof. Crookshank, Sir. W. Priestley, representing the Universities of Edinburgh and St. Andrews; M. Cornu, for the Academy of Sciences; M. Bergeron, for the Academy of Medicine; M. Perrot, for the Normal School; M. Louis Passy, for the Agricultural Society; M. Tissier, for the medical students, and M. Duclaux, Director of the Pasteur Institute.

THE *British Medical Journal* states that the question of the appointment to the chair of physiology in Geneva, vacant by the death of Prof. Moritz Schiff, is exciting some attention in Paris. Amongst the candidates are stated to be Prof. Herzen, of Lausanne; Prof. J. R. Ewald, of Strassburg, son-in-law of Prof. Schiff; Dr. Langlois, assistant in the Physiological Department of the Medical Faculty in Paris under Prof. Richet, and well known for his researches on heat and the suprarenal capsule; Dr. Contjean, one of the staff at the Museum, under Prof. Chauveau, known for his researches on secretory nerves and his other contributions to physiology. Other names are mentioned, but it is evident that with Prevost as a possible successor, and the candidates already mentioned, a worthy successor to Schiff will readily be found.

DR. CHARLES WARDELL STILES has been appointed by the State Department a special commissioner to report on the parasitic diseases of seal life.

THE government of Western Australia decided about a year ago to erect an observatory at Perth at a cost of $25,000. Mr. Ernest Cooke, the government astronomer, has recently been in England purchasing the necessary instruments.

A REMARKABLY violent cyclone has practically demolished the town of Nevertire in New South Wales. The casualties were numerous, but are not fully known, as the telegraph line has been destroyed.

A LANDSLIDE has occurred at the village of Stanna, in the province of Modena, Italy, destroying a large number of buildings.

A SERIES of lectures and conferences upon the educational value of science in the common schools will be held at Teachers' College, New York, as follows:

The educational value of biological science (botany, zoology and physiology). Prof. Henry F. Osborn, of Columbia University. January 14th, 3 p. m.

The educational value of physical science (physics and chemistry). Prof. Ira Remsen, of Johns Hopkins University. Thursday, January 21st, 3 p. m.

The educational value of geological science. Prof. B. K. Emerson, of Amherst College. Thursday, January 28th, 3 p. m.

The Curriculum. Pres. J. G. Shurman, of Cornell University. Friday, January 29th, 3 p. m. (This date is liable to be changed.)

The lecture in each case will be one hour in length, followed by a conference lasting, perhaps, one hour. The purpose of these lectures and conferences is (1) to arouse due appreciation of the study of science, (2) to give helpful suggestions to those who are engaged in teaching science, and (3) to aid in determining the relative importance of these subjects in courses of study.

PROF. DANIEL G. BRINTON will deliver a course of six lectures on 'The Religions of Primitive Peoples,' at New York University, on successive Tuesday evenings, beginning January 12th, at 8 p. m. The lectures will be published by G. P. Putnam's Sons, as Volume II. of the Series of American Lectures on the History of Religions.

Natural Science expects to publish next month an account of flints discovered by Mr. J. Lewis Albert and exhibited at a recent informal smoking evening of the London Geological Society. They are said to be the work of man, though obtained from the Cromer Forest bed at Runton, regarded as forming the top of the Pliocene Series. No one has hitherto professed to find in Great Britain the remains of man at so low a horizon.

THE article entitled 'Biographical Notes on

Pasteur' by Dr. Jules Marcou, published in the issue of this JOURNAL for December 6, 1895, has been translated into French and Spanish and has been distributed by order of the government of Nicaragua to all schools and public institutions of that state.

PROF. HOLDEN will contribute to an early number of *Harper's Weekly* an illustrated article on the Lick Observatory.

MR. J. E. HARTING has resigned from the editorship of the *Zoologist*, which he has conducted for twenty years, and is succeeded by Mr. W. L. Distant.

AT the beginning of the new year the *Naturwissenschaftliche Rundschau*, edited by Dr. W. Sklarek and published by Friedrich Vieweg & Sohn, Brunswick, announces as cooperating editors Dr. J. Bernstein, professor of physiology at Halle; Dr. W. Ebstein, professor of pathology at Göttingen; Dr. A. v. Koenen, professor of paleontology at Göttingen; Dr. Victor Meyer, professor of chemistry at Heidelberg, and Dr. B. Schwalbe, professor of anatomy at Berlin. The new volume is printed on improved paper, presenting a much more pleasing appearance than is usual in German publications. The *Naturwissenschaftliche Rundschau* usually contains one scientific paper, but is chiefly made up of reviews of scientific literature, written with care and impartiality and giving an excellent survey of the progress of science.

THE British government will send, in January, a commission, consisting of General Sir Henry Wylie Norman (Chairman), Sir Edward Grey, Bart., and Sir David Barbour, to inquire into the conditions and prospects of the West India sugar-growing colonies. Mr. Daniel Morris, Assistant Director of the Royal Gardens, Kew, will accompany the commission as expert adviser in botanical and agricultural questions. *Nature* calls attention to the fact that the appointment of Mr. Daniel Morris as scientific adviser is a proof that Kew has been working for the last quarter of a century on the right lines and that its policy is a sound one. Of all the colonies in the West Indies, Jamaica is said to be the only one in a fairly prosperous condition. This has been brought about mainly by the work of the Botanical Department and the encouragement given by it to improve agricultural methods and introduce new industries.

PROF. RICHARD E. DODGE, Teachers' College, New York, will edit a *Journal of School Geography*, the first number of which will appear during the present month. Prof. Dodge will be assisted by a board of editors consisting of William M. Davis, professor of geography at Harvard University; Dr. C. W. Hayes, geologist of the U. S. Geological Survey; Dr. H. B. Kümmell, Lewis Institute, Chicago, Ill.; Dr. F. M. McMurry, of the School of Pedagogy at Buffalo, and Mr. R. DeC. Ward, instructor in climatology at Harvard University. The journal will be issued monthly, with the exception of July and August, and each issue will contain about thirty-two pages of reading matter. Specimen copies will be sent, so far as the edition will allow, on application to Prof. Dodge.

THE current number of *Natural Science* gives the following news concerning recent scientific expeditions: Prof. Penzig, of Genoa, editor of *Malpighia*, has undertaken a botanical expedition to Buitenzorg, Singapore and Ceylon. Dr. Grünling, Curator of the Mineralogical Collection in Munich, has gone to Ceylon on an exploring expedition. Mr. Bastard, who is exploring in Africa, has been prevented by the trouble in Madagascar from penetrating into the interior or that island. He has, however, made good collections of fossils, also anthropological measurements and photographs. Mr. Voillot has returned from a voyage to Haute Mamberé; he brings with him ten Baya skulls and an interesting ethnographic collection. Another valuable anthropological collection is that brought back from Russian Asia by Mr. E. Blanc. Of Mr. Alexander Whyte's explorations in the Karonga Mountains in Central Africa, the results include 6,000 dried specimens of plants, 5,000 land shells, 3,000 insects, numerous mammals, reptiles, geological collections, and so on.

FELIX ALCAN, Paris, has begun the publication of a *Bibliographia Physiologica*, compiled by Prof. Ch. Richet and several assistants. The bibliographies for 1895 and for the first half of

1896 have been issued nearly simultaneously, and it is proposed not only to continue their publication, but also to cover preceding years. Prof. Richet is a zealous advocate of the Dewey decimal system of classification and applies it systematically in the new bibliography. It is printed on one side of the paper only, and the index numbers, sometimes extending to six decimals, are prefixed to each entry. A special volume has been issued giving the classification for physiology, which is somewhat bewildering, as the fifteen hundred publications indexed for a year may be divided among one million classes. When the entries are cut up and made into a card catalogue different years may be combined conveniently, but the separate volumes lose half of their usefulness in that they have no alphabetical index of authors' names. The *Bibliography* is confined to physiology in its narrower sense, excluding subjects such as embryology, histology and bacteriology. There are naturally omissions and errors, but the *Bibliography* will serve a most useful purpose pending the establishment of an international bibliography of the sciences.

At a meeting of the Boston Society for Medical Sciences on December 15th Dr. C. S. Minot described an improved microtome, made for him bythe Bausch and Lomb Optical Company, which is entirely novel in its construction and works with great precision. The model adopted has been chosen: 1st. To secure the utmost steadiness and precision of movement, together with the minimum of errors. To this end, the knife is rigidly clamped at both ends upon a heavy metal frame above the object, and it can be placed in any position and at any desired angle. The object holder is supported under the the knife in such a way that the knife exerts no leverage upon the object. Every part is heavily built and the ways are planed and ground to the greatest possible accuracy. 2d. To secure convenience of use, the micrometer screw bears two toothed wheels, one for automatic movement, each tooth equaling five microns, and one for hand movement by lever, with automatic adjustment, each tooth equaling two microns. The object holder is adjustable by rack and pinion in three places, and has clamping devices for clamping each of the axes and is adjustable for height also. 3d. To make a microtome to work equally well for either paraffine cutting or with alcohol (celloidin, etc.). By a simple device, alcohol falling on the object is drained off without coming in contact with the ways or micrometer screw. The knife possesses the following advantages due to the handles, being of the same cross-section as the blade; the edge is true and, being made by polishing and not by grinding, is much finer than can be ordinarily produced. Every part of the edge can be actually used for cutting in the microtome. The edge may be kept always perfect by rubbing the blade on a piece of plate-glass with Diamatine powder.

At the annual public meeting of the Paris Académie de Médecine held on December 15, 1896, the prizes offered for competition during the past year were awarded. The Saint Paul prize ($5,000), as we have already stated, was divided between Drs. Roux and Behring. *The British Medical Journal* states further that the Academy prize (£40) for an essay on the part played by heredity and contagion respectively in the propagation of tuberculosis was divided between M. Georges Kuss and Dr. Aussett. The Capuron prize (£56) for an essay on the influence of diseases of the lungs in the mother upon the health of the fœtus was awarded to Dr. Chambrelent, of Bordeaux; the Civrieux prize (£40) for an essay on hallucination in mental diseases to Dr. Paul Sérieux; the Daudet prize (£40) for an essay on membranous non-diphtheritic anginæ to Dr. Jacquemart. The Falret prize (£36) for an essay on morphinism and morphinomania was divided between MM. Jacquemart, Paul Rodet, André Antheaume and R. Leroy. The Orfila Prize (£80) for a paper on the etiology of dysentery was awarded to Surgeon-Major M. O. Arnaud. The Portal prize (£30) for an essay on the lymphatic system in its relation to malignant neoplasms was divided between M. et Mme. Christiani, of Geneva, and MM. F. Barjon and C. Regaud, of Lyons. The Pourat prize (£40) for an essay on the relations between thermogenesis and the respiratory exchanges was awarded to M. F. Laulanié. The Laborie prize (£200) was divided between MM. Delorme, Mignon and Mauclaire. Other prizes, to the amount of

about £1,600, were distributed among various competitors, almost exclusively of French nationality.

THE following table gives the mumber of students from the different medical schools who passed the licensing examinations now required in the State of New York for the year ending in 1896:

Schools.	Number of Candidates.	Honor.	Per cent. accepted.
University of the State of New York	2	1	100
New York Medical College and hospital for women	7	0	100
College of Physicians and Surgeons, Columbia University	142	11	92.9
Syracuse University	24	0	91.6
Bellevue Hospital Medical College	47	3	89.3
University of Buffalo	36	0	89.2
Long Island College Hospital	64	0	87.5
Niagara University	15	0	86.6
Woman's Medical College of the New York Infirmary	7	2	85.7
Albany Medical College	47	0	85.1
Eclectic Medical College	20	3	85
New York Homeopathic Medical College	27	3	81.4
New York University	79	2	75.9

THE report of the special commission appointed by the Dutch government to discuss the scheme of draining the Zuyder Zee has been submitted. According to the *Railway Review* it states that such an undertaking is quite possible. The work would take 31 years for completion, and every year 10,000 hectares of land would be restored to cultivation. A dike 30 miles in length would have to be constructed, extending from the extreme end of South Holland to the eastern coast of Friesland. The building of this dike, 35 meters wide at the base and six meters high, will take nine years. The total cost of the work is estimated at £26,000,000, which includes the amount to be paid in indemnities to the fishermen of the Zuyder Zee. The total value of the land thus reclaimed from the ocean is estimated at £27,000,000, so that the Dutch treasury net a profit of £1,000,000, without reckoning the substantial gain to the public wealth and a corresponding increase in the annual revenues from duties and taxes.

UNIVERSITY AND EDUCATIONAL NEWS.

THE Rev. Thomas J. Conaty will be installed as Rector of the Catholic University, Washington, on January 19th. It is expected that Dr. Conaty and Cardinal Gibbons will make important speeches outlining the policy of the University.

EX-SENATOR SAWYER, of Wisconsin, has added $5,000 to his recent gift of $25,000 to the endowment fund of Lawrence University, in Appleton, Wis.

PROF. CHARLES F. CHANDLER has retired from the professorship of chemistry and medical jurisprudence in the College of Physicians and Surgeons, but retains the professorship of chemistry in Columbia University. Prof. Thomas Egleston has retired from the chair of mineralogy and metallurgy in Columbia University, and has been made professor emeritus.

DR. KLEBS, the German pathologist, has been made professor in the Rush Medical College, Chicago, and will also occupy a position in the post-graduate medical school of the University of Chicago.

A SCHOOL of science, with twenty-seven professorships, has been founded at Madrid.

THE following appointments are announced: Dr. G. H. Bryan to be professor of pure and applied mathematics in the University College of North Wales, Bangor; Prof. E. Pringsheim to be professor of physics and Dr. Karl Friedheim to be professor of chemistry in Berlin University; Prof. Paul Staeckel, of Königsberg, to be professor of mathematics in the University of Kiel; Dr. Franz Nissl to be docent in anatomy in the University of Heidelberg.

DISCUSSION AND CORRESPONDENCE.

ON CERTAIN PROBLEMS OF VERTEBRATE EMBRYOLOGY.

I CRAVE your permission to rectify certain mistakes into which the reviewer of my recent work has fallen in his notice in SCIENCE of November 20th (p. 763). Your reviewer makes the following statements: