chemistry in 1855 and mathematics pure and applied; in 1872 he became professor in the course then including machines and exploitation of mines, and became director of the School of Mines in 1887, where he remained until the end of the XIXth century, nearly a half-century of continuous service, substantially all at l'Ecole des Mines. His principal works had meantime been published, on 'Mines and Mining' and on 'Thermodynamics and Motor-Machines.' He had been called to serve on several international juries, and on various commissions, and had earned many honors, including that of Member of the Institute in 1884 and of 'grand-officier' of the Legion of Honor in 1900.

In replying to the cordial and eloquent addresses of MM. Carnot and Lemonnier, M. Haton stated that alumni of the school had supplied 39 members of the Institute and 8 'Correspondents':

"Hommes d'action, hardis explorateurs, chez de grandes industries, ingénieurs chargés de la conduite des travaux ou des affaires, ils soutiennent dans le monde entier le bon renom de l'École."

The *Compte Rendu,* as its frontispiece, has an excellent portrait of M. Haton de la Goupillière. It indicates that its original retains his youth and vigor wonderfully and we may hope for him many more years of active, fruitful and honorable life. His friends in this country will cordially unite with those about him in wishing for him 'many happy new years.' R. H. Thurston.

SCIENTIFIC NOTES AND NEWS.

Professor E. C. Pickering has completed twenty-five years of service as director of the Harvard College Observatory, and in recognition of the fact the staff of the Observatory has presented him with a silver cup.

The condition of Professor Rudolf Virchow, who recently suffered an injury from a fall, causes apprehension to his physicians.

Dr. W. W. Keen, who is at present in India, recently fell from his horse, fracturing one of his clavicles. The accident was not serious.

The daily papers state that President Roosevelt has overruled the decision of Secretary Long to send Capt. Charles H. Davis, superintendent of the Naval Observatory, to sea.

Dr. Henry B. Kümmel was appointed state geologist of New Jersey by the board of managers of the Geological Survey at their meeting on January 10. Mr. Kümmel has been connected with the Survey since 1892, and since 1899 has been assistant state geologist, being in charge of the work since Dr. Smock's resignation last July. He is a graduate of Beloit College, A.B. 1889, and did post-graduate work in geology at Harvard University, and the University of Chicago, from which he received the degrees of A.M. and Ph.D. respectively. He was elected a fellow of the Geological Society of America in 1895.

Samuel McCune Lindsay, assistant professor of sociology in the University of Pennsylvania, has been nominated for Commissioner of Education in Porto Rico.

The Paris Academy of Medicine has awarded its Hugo prize of $200 for the best work on the history of medicine to Dr. Melanie Lapinska for her book on the history of women physicians.

Dr. Charles H. Burnett, a well-known writer on diseases of the ear, died at Bryn Mawr, Pa., on January 30, aged sixty-one years.

Lieutenant von Siegsfeld, after a balloon ascension from Potsdam to study artificial respiration, was killed in the descent.

The American Philosophical Society, Philadelphia, has arranged for a general meeting on April 3 and 4, and a large number of scientific men from all parts of the country have signified their intention of being present. Members wishing to present papers are asked to communicate the titles to the secretaries without delay, so that they may be inserted in the preliminary program which will be issued as soon after February 15 as practicable. Members expecting to attend the meeting are requested to notify the secretaries at as early a date as possible so as to facilitate the arrangements for their entertainment.

The 'Leopoldinisch-Carolinische Akademie deutscher Naturforscher,' now in Halle, cele-

brated the two hundred and fiftieth anniversary of its foundation on January 1. The academy, under the name, 'Academia Naturæ Curiosorum,' held its first meeting in Schweinfurt on January 1, 1652, and is thus the oldest academy of sciences north of Italy, the Royal Society having been established in 1662, and the French Academy in 1666. The academy began the publication of proceedings in 1670 and enjoyed extraordinary privileges, the president and secretary being elevated to the nobility, the former with the rank of count. At the present time the Academy has about nine hundred members and is planning for the erection of a new building.

THE Association of American Universities will hold its annual meeting at Chicago on February 25, 26 and 27.

PRESIDENT HADLEY, of Yale University, will give six Lowell lectures at Boston on 'The History of Academic Freedom.'

PROFESSOR B. E. FERNOW, of the College of Forestry, Cornell University, will lecture in Ottawa, Canada, on March 6, before the Canadian Forestry Association.

UNDER the auspices of Columbia University, Professor William D. Burr is giving at the Cooper Union the following lectures on mechanical engineering:

February 4, 'Ancient Civil Engineering Works.'

February 11, 'Bridges.' The latter portion of the lecture will include the treatment of masonry arches and suspension bridges, with examples of applications to the longest spans yet contemplated.

February 18, 'Water Works for Cities and Towns.'

February 25, 'Some Features of Railroad Engineering.'

March 4, 'Nicaragua Route for the Isthmian Ship Canal.'

March 11, 'The Panama Route for the Isthmian Ship Canal.'

The lectures will be issued in book form by the Columbia University Press.

THREE lectures, in German, by Max Uhle, Ph.D., Hearst lecturer in anthropology, and director of the excavations and explorations of the University of California in Peru, are being given as follows:

February 3 and 5, 'The Sources of Ancient Peruvian Civilization.'

February 10, 'Some Incasic Ruins of Central Peru.'

ARTHUR CURTISS JAMES, ESQ., has purchased the collection of Ainu objects made by Professor Bashford Dean last year and has presented it to the American Museum of Natural History. The Museum has also received from Mr. W. Jochelson, of the Jesup North Pacific Expedition, his Koryak collection from Siberia, consisting of about 1,200 pieces, among which there are many objects of prehistoric age.

PROFESSOR J. S. KINGSLEY, Tufts College, announces that the summer school of biology known as the Harpswell Laboratory, established at South Harpswell, Maine, in 1898, will be open from June 16 to September 13, 1902; the regular courses of instruction beginning July 2, and continuing for six weeks. The laboratory is a small wooden building directly on the shore and affords accommodations for fifteen or twenty students. South Harpswell is in Casco Bay, sixteen miles from Portland, from which place it is reached by steamer. Casco Bay has a rich fauna and flora and is not excelled as a collecting ground by any point between Eastport and North Carolina. Already 529 species of invertebrates have been reported from its waters and many novelties turn up each season. South Harpswell itself is well situated, being at the extremity of a narrow peninsula, ten miles in length, thus ensuring freedom from hot weather. In 1901 the thermometer did not reach 80° in the laboratory.

THE New York State Medical Society at its session in Albany on January 29 received recommendations of the legislative committee as follows:

That local Boards of Health be requested to follow the work of the Milk Committee of the New York City Medical Society in the efforts made to provide pure milk.

That the recommendation making toward the establishment of a National Health Board, with a representative in the President's cabinet, be indorsed.

That the questions involved in Dr. Koch's pa-

per at the London Tuberculosis Congress upon 'The Communicability of Bovine Tuberculosis' invite further experiments in this field before any conclusions can be drawn that would modify existing methods for dealing with the disease.

The report of the library committee for 1901 of the College of Physicians of Philadelphia, as abstracted in the *Philadelphia Medical Journal,* shows 64,916 volumes in the library, including 1,070 duplicates. 4,079 volumes have accumulated since July, when all duplicates on hand were disposed of. In addition to the volumes, there are in the library 58,395 unbound pamphlets, reports and transactions. The library regularly receives 356 medical periodicals, 86 of which are American, and 270 foreign. 2,212 inaugural dissertations have been received during the year.

At a meeting of the Royal Institute of British Architects on January 21, a paper on 'The Recent Architectural Discoveries at Stonehenge' was read by Mr. Detmar Blow, who, with Dr. Gowland, superintended the excavations which were made in October last for Sir E. Antrobus. Mr. Blow, according to the report in the London *Times,* pointed out that the great monolith called the leaning-stone was the largest in England, Cleopatra's needle excepted. It was one of the pillars of the highest trilithon, and stood behind the altar-stone near which it leaned at an angle of 65 degrees. Half-way up it had a fracture one third across it; and the weight of stone above that fracture was a dangerous strain on it. It had now been brought to a vertical position. One Roman coin and one George III. penny were found quite near the surface. Numerous chippings of the sarsen and blue stone of which Stonehenge was built were discovered. The flints found were used for the softer sarsen and blue stones, and the hand-hammers and mauls for rough dressing. From this the deduction had been made that the building belonged to the Palæolithic period. All authorities agreed that it was the work of a highly civilized people. The construction was one of a stone development and the surface of the stone was finished much like that of granite. The design of the pillars was in his opinion evolved from the shapes of the flint instruments used by the workman, to which his hand had grown accustomed. Each pillar had a bold entasis in its elevation, and in its plan foreshadowed the column. With the aid of the illustrations he described the method of raising the leaning stone and the sifting process, the articles found being afterwards shown to the audience. Stonehenge having been generally supposed to be of the bronze age, it was with great joy that he lighted upon the stone implements. It was, he believed, the only occasion on which the implements were found actually next to the stone building where they were used. Sir Norman Lockyer, in opening a discussion on the paper, said he believed archeologists had come to the conclusion that, from the evidence which had been obtained, they were justified in assuming that the sarsen stones were erected in the Palæolithic times—that was to say, before the age of bronze, or at all events before bronze had been used for any ordinary kind of work in that part of England. Before the excavations were commenced Mr. Penrose and himself had been occupying themselves with Stonehenge from a slightly different point of view. They were very anxious to determine its age, and it was found much easier to get certain astronomical data from Stonehenge owing to its position than from other ancient monuments. He gave a number of astronomical data in support of his assumption that Stonehenge was a solar temple and one used for observation in the height of summer. From their observations they came to the conclusion that the avenue which was associated with the sarsen stones was laid down about the year 1680 B. C. Such temples as Stonehenge were erected in the very first blush of civilization in order that the people should be able to fix the time for performing agricultural operations. He thought that Mr. Penrose and himself had been able to show beyond all doubt that we had in Stonehenge a temple for observing the length of the year by observing the rising of the sun on the longest day of the year, although in other parts of England there were temples for observing the sun not on June 21 but early in May and early in August.

The *American Museum Journal* reports

that through the generosity of a friend of the Museum, who desires to have his name withheld from the public, six groups have recently been added to the very attractive and instructive series representing birds amid their natural surroundings which are to be seen in the halls of the Ornithological Department. The new groups represent the American dipper, or water-ousel, the osprey, the yellow-headed blackbird, the coot, Wilson's phalarope and the wild pigeon. The material for the first-named was gathered by Mr. Frank M. Chapman last summer on the banks of a rushing icy stream issuing from a glacier in the Selkirk mountains of British Columbia. The rocky bank of the stream, the nest in the cleft of the rock and the birds in and about the nest have been reproduced with lifelike fidelity in the Museum exhibition case. Mr. Chapman collected the specimens and accessories for the osprey group on Gardiner's Island, off the eastern end of Long Island, and those for the blackbird, coot and phalarope groups at Shoal Lake, Manitoba. The twelve specimens included in the wild-pigeon group were secured with much difficulty from collectors and dealers throughout the country, the surprising fact being incidentally developed that a species which, within the last fifty years, was one of the most abundant native birds of this country, is now so rare, not only in nature, but also in collections, that specimens of it are practically unobtainable. Each of these new groups is designed to illustrate not only the haunts and habits of a species of birds, but also some fact of general biological interest. This feature will be fully set forth in the labels accompanying the cases.

AT the annual meeting of the Mathematical Association, London, Professor A. Lodge read a paper introducing for discussion the subject of improvements in the teaching of elementary mathematics. According to the report in the London *Times* he explained that the special object in bringing the whole question forward now was to enable the Association to cooperate with the British Association committee formed for the purpose at the Glasgow meeting last year. Many teachers had been for a long time aware that the teaching of geometry in this country was suffering from its being based on a fixed ancient model which, however excellent, was not in many respects satisfactory as a text-book for beginners. The efforts hitherto made had been powerless to make any appreciable effect on the action of the great examining bodies in the country, and without their cooperation much progress was not possible. Now, however, with the powerful leverage of the British Association to assist them, the Association might confidently look for real and lasting progress. The best method of teaching geometry would, no doubt, be the question which would require most attention, as that was a matter in which all, teachers and examiners, must move together if at all. Men came up to engineering colleges who were slow and inaccurate in computation, who did not know the contracted methods of multiplication and division, who were as likely as not to put the decimal point in the wrong place. They wanted boys taught to be ready and rapid computers, to be able to make rough checks on their own work so as to avoid gross errors, to cultivate common sense in connection with problems, and to be in the habit of verifying answers. It had to be remembered that the pupil's mental equipment was chiefly arithmetic and algebra, and his geometry should be built on these notions as much as possible, instead of being carefully divorced from them, as was done in so many text-books. It would be advisable at the outset to adopt some French text-book as our model. The Americans had done so already, and the chief points in their books were: (1) The more orderly arrangement of propositions; (2) the entire separation of theorems from problems of construction, hypothetical constructions being used in proving a theorem; (3) the closer association of a proposition and its converse when both were true; (4) the adoption of arithmetical notions and algebraic processes; (5) the early introduction of simple *loci;* (6) insistence on accurate figures drawn by accurate and practical processes; (7) practice in exercises from the very beginning. It had been suggested that he should add, 'Attention paid to the various phases of a theorem as the figure

changes, and (as the student progresses) to the easier forms of generalization.' The greater part of these improvements could be adopted at once, provided that the sanction of the great examining bodies could be obtained. In conclusion he urged on all who were convinced that reform in geometrical teaching on some such lines as he had indicated was urgent and imperative that they should not rest content until some at least of the reforms were sanctioned by the great public examining bodies. The meeting ought not to conclude without appointing a strong committee to keep in touch with the British Association committee.

UNIVERSITY AND EDUCATIONAL NEWS.

MR. JOHN D. ROCKEFELLER has offered to give $1,000,000 toward the construction, equipment and endowment of the new buildings of the Harvard Medical School, on condition that $500,000 be secured from other sources.

ALLEGHENY COLLEGE has recently added two hundred thousand dollars to its endowment fund through the efforts of the president, Dr. Wm. H. Crawford.

DR. NICHOLAS MURRAY BUTLER will be installed as president of Columbia University on April 19. The ceremonies will be similar to those on the occasions of the installations of Presidents A. P. Barnard and Seth Low. The charter and keys of the University will be presented by Mr. William C. Schermerhorn, chairman of the board of trustees, to the president-elect, who will respond briefly, and who in turn will be succeeded by speakers representing faculty and alumni. Brief speeches of greeting will be made by Presidents Eliot and Hadley and by representatives of other universities, and the program will conclude with the president's inaugural address.

REV. DANIEL S. BRADLEY, of Grand Rapids, Mich., has been elected president of Iowa College, Grinnell, Iowa.

THE Supreme Court has dismissed the suit of the New York University against the Loomis Laboratory to gain possession of its property.

OWEN'S COLLEGE, Manchester, will celebrate in March the fiftieth anniversary of its foundation.

PROFESSOR HUGO MÜNSTERBERG, as chairman of the philosophical department of Harvard University, is making special efforts to secure funds for the erection of a building for the department, to be known as Emerson Hall. Plans have been drawn by Mr. A. W. Longfellow, according to which the hall is to be a three-story structure, of red brick. On the first floor there will be small recitation rooms and one large lecture hall, seating 400 students. The rest of the floor will be taken up by a philosophical library, comprising an extensive collection of philosophical works. The second story will contain small recitation rooms and seminary rooms for advanced work. The entire third floor will be used for a psychological laboratory. There will be one large room, where work of a general character may be done. The rest of the laboratory will be divided into fifteen sections, each of which will be specially equipped for certain specific branches of the subject.

IT appears that the elective courses of the junior year at Yale University have been selected by students, as follows: History 390, English 374, philosophy and psychology 336, social science 323, German 117, French 97, Latin 36, Greek 21, geology 112, chemistry 85. Philosophy and psychology were last year made elective for the first time and are doubtless more popular than when they were required. The classical languages appear to fare badly, for it is probable that only those who carry them into the junior year get an adequate return for required routine work of previous years.

THE reorganization of the faculty of the Imperial University at Pekin, with the retirement of President Martin, is contemplated. He criticised the government severely after the siege of the legations, but his age is the principal reason for his removal.

R. J. PARANJPE, the Hindoo who was senior wrangler of Cambridge University three years ago, has returned to his native country, and has been given a professorship at Fergusson College, Poona.