hours, and in biology it was decided that six semester hours of college work were acceptable for students who had completed a year of biology in high school.

DR. W. W. ROWLEE, of Cornell University, gave an illustrated lecture on "Balsa Wood, its production and uses," at the New York State College of Forestry at Syracuse, on April 2. The lecture included scientific data and experiences gleaned from an eight month's absence in Central America in the employ of the American Balsa Company.

DR. JOHN C. MCVAIL delivered the Milroy Lectures before the Royal College of Physicians of London on March 13, 18 and 20; his subject being half a century of smallpox and vaccination. The Goulstonian Lectures, on the spread of bacterial infection was delivered on March 25, 27 and April 1, by Dr. W. W. C. Topley, lecturer on bacteriology Charing Cross Medical School and the Lumleian Lectures, by Sir Humphry D. Rolleston, on cerebro-spinal fever, were planned for April 3, 8 and 10.

JOHN E. JOHNSON, JR., a director of the American Institute of Mining and Metallurgical Engineers, died on April 4 in Scarsdale, N. Y., of injuries received when he was struck by an automobile earlier in the day. Mr. Johnson was fifty-nine years old. He was the author of books on mining and metallurgical subjects.

DR. MARY SOPHIE YOUNG, for the past eight years instructor in botany and curator of the herbarium in the University of Texas, died on March 5 after an illness of a few week's duration.

THE executive committee of the American Federation of Biological Societies has called the annual meeting for April 24, 25 and 26, 119, at Johns Hopkins Medical School, Baltimore, Md.

IT is announced that the German government has decided to return to China the astronomical instruments which were transported from Pekin to Germany in 1900. Negotiations have been opened for the shipping of the instruments to China.

UNIVERSITY AND EDUCATIONAL NEWS

THE legislature of Nebraska has recently appropriated for the College of Medicine at Omaha for the ensuing biennium a total of $380,000. This amount includes the maintenance of the University Hospital.

A GIFT of $5,000 for a scholarship in the Sheffield Scientific School of Yale University has been made by Mrs. Arthur A. Stilwell, of New York City, in memory of her son, Thomas Vincent Stilwell, who lost his life in the war.

FUNDS have been provided for a scholarship in the department of chemistry of the University of Chicago, to be called "The Joseph Triner Scholarship in Chemistry." It is to be assigned to a Czecho-Slovak graduate of the Harrison Technical School, Chicago.

MR. EMIL MOND has offered to the University of Cambridge £20,000 to be used for the establishment of a chair of aeronautical engineering. The chair is to be designated the Francis Mond professorship of aeronautical engineering after Lieutenant Francis Mond, the son of the donor.

PROFESSOR EDWIN J. BARTLETT, senior professor at Dartmouth College and son of a former president of the college, has resigned from the chair of chemistry which he has held since 1883, his resignation to take effect in 1920. Leave of absence for the second semester has been granted to him.

IT is reported that Sir Arthur Newsholme, the distinguished British physician and author of works on the prevention of disease, has been offered the chair of public health at The Johns Hopkins University.

DISCUSSION AND CORRESPONDENCE

ON SOME PROBOSCIDEANS OF THE STATE OF NEW YORK

AT a meeting of the Geological Society of America in Washington, at the close of the year 1902,[1] the question arose as to the former presence of the mammoth in New York. It was said that, when Theodore Roosevelt, as

[1] SCIENCE, Vol. XVII., p. 297.

governor of New York, had urged that the mammoth should appear on its coat of arms, it was evident that, although a mighty hunter of existing game, he was a bit weak as regards extinct types. Sad to say, it was the members of the society that were a bit weak on this particular type. The following examples appear to vindicate the knowledge of the mighty hunter.

In 1842 J. E. De Kay[2] described a molar tooth of *Elephas primigenius* under the name *Elephas americanus*. It has been found at Pittsford, in Monroe County. In Rochester University there is a molar of the same species which is said to have been found at Williamson, Wayne County. Since the meeting referred to, Dr. Burnett Smith, of Syracuse University, has reported to the present writer a tusk and a tooth from Minoa, Onondaga County.

Of the great elephant known as *Elephas columbi*, a tooth was described from Homer, Cortland County, in 1847.[3] In the American Museum of Natural History, New York, there is a part of a molar which was found near Elmira, Chemung County, and which appears to belong to this species.

In 1843 Mather[4] stated that bones of both the mastodon and of the elephant had been found in Orange County. The identification of the elephant is doubtful. In 1858 Emmons[5] reported that an elephant tooth had been taken from the shore of Seneca lake. To which species this belonged is not known.

It would be interesting to learn when the mastodon (*Mammut americanum*) became extinct. It is certain that the species was widely spread over at least the northern states after the disappearance of the last glacial sheet. In New York they are found in great numbers in the southeast corner and at the western end of the state, in marls and mucks overlying the Wisconsin drift. Along lakes Erie and Ontario they are found on the lakeward side of the Iroquois beach, an indication that the species survived there until the waters had shrunken quite into their present limits.

Professor H. L. Fairchild[6] has recently shown that, while the foot of the Wisconsin glacier was occupying the northern side of Long Island, the sea occupied the remainder of the island; and that during this occupation a thick deposit of stratified drift was laid down. After the ice had retired from the island, probably well toward the north of the state, the region south of the ice sheet began to rise, and Long Island at length became dry land or swamp. In depressions on the surface of these sea-laid deposits, there afterwards accumulated silts and muck; and in these pond deposits at three or four places on the island, there have been found remains of mastodons. In one case at least, at Riverhead, the land had probably risen to nearly its present level, for the mastodon was found between present low and high water. This must have been well along towards the end of the pleistocene.

An interesting case is that of a mastodon found in 1866 at Cohoes, near the mouth of the Mohawk. This skeleton, nearly complete, was mounted by G. H. Gilbert and is yet in the State Museum at Albany. It formed the subject of an essay by James Hall[7] and also the first writing of Gilbert. At Cohoes there are found some hundreds of potholes, some in the bed of the present river, many of them in process of forming, others on the banks a hundred feet or more above the present river and long ago filled up. One of the latter, of irregular form, because of the coalescence of two or more originally distinct holes, proved to have a depth of more than 60 feet, and diameters of 33 and 73 feet. Out of this excavation had been taken thousands of loads of muck, with trunks and branches of decayed trees. At a depth of about 50 feet from the

[2] "Zool. N. Y. Mamm.," p. 101, pl. XXXII., fig. 2.

[3] *Amer. Jour. Agricult. and Sci.*, Vol. VI., p. 31, fig.

[4] Geol. 4th Distr., pp. 233, 636.

[5] Geol. Surv. N. C., East Counties, p. 200.

[6] *Bull. Geol. Soc. Amer.*, Vol. XXVIII., pp. 297–308.

[7] Twenty-first Ann. Rep. N. Y. State Cab., 1871, pp. 99–148, with plates.

original surface there was found the principal part of the skeleton, considerably scattered about, but with the skull nearly intact and with unbroken tusks. The bones lay on a bed of clay, broken slate, gravel and water-worn pebbles. This was probed to a depth of ten feet without finding bottom. The right fore leg of the skeleton was missing, but was later found in another pothole 60 feet farther up stream and at least 25 feet higher. Hall thought that the potholes were of glacial or preglacial origin, but I am assured by Professor Fairchild that they have been drilled since the Wisconsin ice sheet abandoned that vicinity. When the ice began to withdraw, the region was depressed about 350 feet below its present level, as a result of which the site of Cohoes was covered with a thick deposit of sand and clay. As the land slowly emerged, the old Mohawk River (Fairchild's Iromohawk) cut through the estuary deposits and finally reached the underlying Hudson slates. Then under the action of strong currents the drilling of the potholes began. The land had then risen, as Professor Fairchild writes, at least 150 feet. At the same time the stream bed was being worn down into the rock and the falls were moving up stream past the potholes. When the mastodon entered the pothole this had long before ceased being cut; for, as already stated, it had became filled to a depth of at least 10 feet with rock débris. It had quite certainly been abandoned by the river waters, except at times of flood. How now did the mastodon get into that hole? Hall concluded that it had been frozen up in the glacial ice and had been dropped part in one pothole, part in the other. But when those potholes were ready for occupation as a tomb for the mastodon, there was no part of the general glacial sheet from which the cadaver could have reached Cohoes. As a recently dead body it might indeed have been floated down the Mohawk; but the animal could as well have lived and died at Cohoes. We may fairly assume that it had only recently died and was lying on the flood plain not far above the potholes. No disarticulated bones could ever have been distributed as this skeleton was. The bones must, perhaps without exception, have been held together by the ligaments and probably much of the flesh remained. At this moment the river rose and swept the flood plain, carrying the cadaver over the potholes. First the right leg became detached and was swept into the upper one of the two holes; then the remainder of the body was carried on and dropped into the second hole. Here the swirling waters either at once or during subsequent floods scattered the skeleton somewhat. As time went on, all sorts of materials were borne into the potholes during freshets. Possibly some trees growing on their margins fell into them. At any rate, they finally became filled up.

It appears quite certain that when the Cohoes mastodon was buried the deposition of marine sediments in the Champlain and the upper St. Lawrence valleys had largely taken place and the Champlain epoch, about the last leaf of the last chapter of the Pleistocene, had nearly ended. Did mastodons end their career at this stage of geological history or did they continue on into the Recent epoch? It may be impossible to determine this. If they did continue to exist, it might be supposed that remains of them might be found in deposits of marl and muck overlying the Champlain deposits along Lake Champlain, and the St. Lawrence and Ottawa rivers; but the writer has not learned of any such cases. At any rate, the close of the Pleistocene or the beginning of the Recent became an insalubrious time for this species, a mighty race which can be traced back possibly to the Pliocene and which had weathered the vicissitudes of four or five glacial periods. At approximately the same time there perished two species of elephants, the giant beaver (*Castoroides*), the moose (*Cervalces*), and perhaps other great animals.

O. P. HAY
U. S. NATIONAL MUSEUM

HUMAN FLYING

TO THE EDITOR OF SCIENCE: While engaged in some scientific research, my attention was