agricultural program. Until Congress once for all directs that agricultural functions shall be retained in the Department of Agriculture and those now elsewhere placed therein, the threat of dismemberment will continue to hang over the agricultural group of Federal activities.

One more thought—it is, of course, obvious upon reflection that there is a fallacy in the idea that any one department can encompass a major part of the governmental activities in the field of conservation and could possibly be entitled to that name. Conservation as a purpose is achieved by innumerable governmental activities quite unrelated. It would be almost as logical to suggest a department of thrift as to propose a Department of Conservation with the implication that it could be all-inclusive in this field.

No action was taken in the Senate on either bill, but the legislation will undoubtedly be pushed at the beginning of the next session.

Another baleful feature is in the Senate bill—the authority for the President, with Senate concurrence, to hereafter appoint bureau chiefs when the position is determined by the President to be policy-making in character. This opens the door wide to the spoils system in these important positions, many of which are now under civil service, and so offer a goal to ambitious and qualified scientists which, under the reorganization bill, would be denied them except by political preferment.

CORRESPONDENT

A UNIQUE DOCUMENT

THE following document is probably unique in the history of science. I have translated it from Issue 1, Volume XIV of the *Astronomical Journal of the Soviet Union,* where it appears in front of page 1.

OTTO STRUVE

YERKES OBSERVATORY,
WILLIAMS BAY, WIS.

"We Demand Ruthless Punishment for the Vile Betrayers of our Great Country.

"The scientific workers of the Soviet Union have learned with a feeling of revolt and great wrath of the monstrous crimes perpetrated by the contemptible Trotzkysts—those heinous traitors of their country, whose treacherous activities are at present being unraveled by the soviet court.

"Having sold themselves to the fascists, having come to an agreement with the diplomats and general staffs of some aggressive imperialistic states, this despicable gang of human degenerates, of servants of fascistic cannibals, being led by the agent of the Gestapo, the bandit Trotzky, was selling our socialistic country and its riches to the worst enemies of human progress.

"The abominable traitors were organizing attempts to murder the best men of the present time, the leaders of the first socialistic state in the world; they were organizing monstrous injuries to the socialistic factories, mines and railroads; they were murdering our heroes, the stakhanovtzi, our glorious and brave red soldiers; they were stealing from the soviet state, in order to maintain a pack of Trotzkysts and in order to finance their criminal activities.

"In their attempt to undermine the military and economic strength of the great land of socialism, this despised gang of restorers of capitalism was trying to make it easier for the fascists to carry out their plans for seizing the territory of the SSSR and for the restoration of capitalism. They were dreaming of returning the power in our country to the capitalists, of liquidating the kolkhosi and the sovkhosi, of enslaving the soviet people, of creating unemployment, poverty and famine; they were trying to deprive the soviet people of its great conquests, which are written into the Stalin Constitution.

"We demand from our soviet courts merciless punishment for the infamous traitors! We demand the annihilation of the despicable degenerates!

"We also demand a complete investigation into the participation of the right-wing renegades—Bukharin, Rijkov, Uglanov—in the criminal activities of the Trotzkysts, and we demand that they be called to the severest accountability.

"The scientific workers will give all their knowledge and strength for the even more rapid growth and flourishing of our great socialistic country, for the increased strength of the Red Army—that faithful guardian of the soviet frontiers.

"The scientific workers, together with all the soviet people, will unite still closer around the communistic party, its Central Committee and the beloved leader and friend, comrade Stalin."

Signed by the President of the Academy of Sciences, V. Komaroff, and by eighteen members of the Academy and professors.

(Izvestia, January 27, 1937.)

A MINNESOTA KITCHEN MIDDEN WITH FOSSIL BISON[1]

FROM July 12 to August 25 the University of Minnesota has been digging an archeological deposit in a bog in Itasca State Park, the seat of the source of the Mississippi River. In cooperation with the State Conservation Commission and the Federal Government whose financing provided adequate labor, the Department of Anthropology has spent the major part of its 1937 field Summer Session digging the newly discovered bog deposit. To date the work has rescued some two thousand knife-marked, food-refuse animal bones, with bone and stone artifacts.

The bone bed is a marly layer which lies on the old lake bottom of an earlier southward extension of the present west branch of Lake Itasca. That old lake

[1] Preliminary notice.

bottom lies 6 to 8 feet below the present water table as exposed in Nicollet Creek, which feeds the west branch of Itasca. The bone bed varies in thickness up to about 4.5 feet. It lies from about 3.5 to 9 feet beneath the present surface of the bog, which consists of living grasses, sedges and marsh weeds growing above successive layers of massive peat, sandy peat, marly sand and more consistent marl having abundant snail shells. Immediately below this stratified bog is the old lake bottom of boulders, cobbles, gravel and sand.

The bones are well preserved and some of them, even as washed in the field, are distinctly seen to be mineralized. Their surfaces are knife-marked to an unusual degree. None have been noted bearing tooth marks of carnivores.

Among the bones rescued and identified in the field are those of bison (*Bison occidentalis*)[2] represented by a skull with horn cores, long bones, jaws, vertebrae, cartilage and fragmentary identifiable pieces. There are bones of elk, represented by several jaws, vertebrae and long bones—two of which have been modified for artifacts. There are a few bones of bear, caribou and, probably, moose and wolf. Besides, there are numerous bones of fish and carapace of at least two species of turtles.

Five stone artifacts have also been recovered from the bone bed, three of which are flake specimens with retouching, while the fourth and fifth are chopping tools chipped to rough, parallel faces, and retouched on working edges.

ALBERT ERNEST JENKS
UNIVERSITY OF MINNESOTA

A FIRE-BALL

THE electrical phenomenon known as a "fire-ball" is rather a rare occurrence. Therefore one that I saw at Fitzwilliam, New Hampshire, at 5 P.M. on August 10 may be worthy of record. I was seated on a second story porch enclosed with glass watching the storm. A radio aerial extends from a distant tree to a point on the side of the house some distance from the porch. Coincident with a crash of thunder, the fire-ball appeared. I can not say that it followed the wire or came from the sky. It just came out of space and seemed to move directly toward the window and then fell as though to enter the cellar of the house. It was a round, bronze, glistening ball with gleaming rays shooting from the top and sides; by its beauty and brilliance reminding one of an ornament at the top of a Christmas tree. Such was my fleeting sight of a fire-ball. Probably at the same instant, all electric fuses in the house blew out with unusual violence.

MARY ETHEL HUNNEMAN

SPECIAL ARTICLES

CATATONIA PRODUCED BY THE INTRODUCTION OF HEAVY WATER INTO THE CEREBROSPINAL FLUID

THE mammalian central nervous system is known to react to heavy water (deuterium oxide). Barbour and Trace[1] described in mice hyperexcitability succeeded by depression, when the animal's body water was about one third saturated with deuterium. Hansen and Rustung[2] in more acute experiments, with several cc of deuterium oxide at one time, described depression, catatonia and rolling movements. We[3] have seen the same effects, as well as potentiation of the convulsant action of ergotoxine.

In larger animals we have now achieved concentrations effective for the nervous system by injections directly into the cerebrospinal fluid, whence, due to slow drainage, the deuterium is dissipated much more slowly than from other sites.

Over the parietal brain cortex of seven rats we have introduced one or two tenths of a cc of deuterium oxide through a previously made trephine hole. The uniform result was catatonia (catalepsy). This state developed within a few minutes, lasting usually for many hours, sometimes being evident on the next day. Ultimately complete recovery occurred in all animals. Other central effects were observed in some; for example, the eyeballs receded in three rats, two showed ataxia and one showed hyperexcitability, with jumping. Two adult cats were also given deuterium oxide, by lumbar puncture, with the successful production of catatonia in both cases. This was accomplished in a female cat of three kilos by withdrawal of 0.4 cc spinal fluid, followed by injection of 0.7 cc deuterium oxide, 99.5 per cent., and in a male four-kilo cat, from which 1.5 cc fluid was removed and 2.8 cc deuterium oxide injected without excess pressure.

Abundant evidence has accumulated in this laboratory[4] of a variety of pharmacological actions occurring when 20 per cent. heavy water is in contact with body cells. In the catatonia experiments a like degree of saturation must have been attained in parts of the

[2] Identified by Dr. Samuel Eddy, associate professor of zoology, University of Minnesota.

[1] H. G. Barbour and Jane Trace, *Jour. Pharm. and Exp. Therap.*, 58: 460, 1936.

[2] K. Hansen and E. Rustung, *Klin. Wochenschr.*, 14: 1489, 1935.

[3] H. G. Barbour and J. B. Herrmann, *Jour. Pharm. and Exp. Therap.*, 1937. (In press.)

[4] H. G. Barbour, *Yale Jour. Biol. and Med.*, 9: 551, 1937.