Comments and Communications

Use of Nembutal as an Anesthetic for Large Wild Mammals[1]

DURING the study of hibernation in the black bear, it was necessary to attach instruments to the animal and to take periodic samples of blood. This required the complete immobility of the bear. Ether anesthesia took too long a time before complete sedation occurred. Nembutal (the trade name of sodium pentobarbitol), because of its ease of administration, safety, and rapid action, was therefore tried and found satisfactory.

An adult male American black bear (*Ursus americanus*), weighing 211 pounds, was made available through the courtesy of Edward Johnson, superintendent of the Woodland Park Zoological Gardens, Seattle, Wash., and was anesthetized upon three occasions. Several attempts at oral administration of Nembutal, both in a bolus of ground raw meat and mixed with powdered brown sugar, proved unsuccessful, so intraperitoneal injections were used. The bear, without food for 24 hr, was incarcerated in a squeeze cage and held steady while the Nembutal, dissolved in water at a concentration of 25 mg/kg body weight, was injected intraperitoneally. The bear was then allowed to move freely within the cage, while observations and records were made on its heartbeat, respiration rate, and subsequent actions until sedation occurred.

Immediately following the injection a respiration rate of 28/min and pulse rate of approximately 160/min were recorded. Within 17 min surgical sedation was attained. The respiration rate dropped and remained fairly uniform at 12/min, with the pulse rate at approximately 110. Surgical sedation on this occasion remained for about 83 min, during which many blood samples were taken from the scaphenous vein. The bear showed no deleterious aftereffects. The data obtained from these and subsequent blood samples are being described elsewhere.

A second intraperitoneal injection with a smaller dose of 20 mg/kg body weight proved inadequate, so a supplementary injection of sodium pentothal, 7.5 mg/kg, was given intraperitoneally. In approximately 43 min after this second injection, or 2 hr and 5 min after the initial injection of Nembutal, sedation occurred. Food had not been withheld for the previous 24 hr, and this might have prolonged the time required. Although sedation was not as deep as in the previous trial, since both the heartbeat at 120/min and the respiration rate at 22 were higher, nevertheless, it persisted for approximately 1 hr. No ill aftereffects were noticed.

A third trial similar to the first was made after food had been withheld for 24 hr. In 13 min complete surgical sedation, which lasted approximately 1 hr was reached, with the pulse rate remaining at about 100/min and a respiration rate of 12. Blood samples were taken, and electrocardiograms, involving numerous manual operations in the cage with the bear, were recorded. Again there were no ill aftereffects. Repetition of dosage and effects indicated that Nembutal injected intraperitoneally at a concentration of 25 mg/kg body weight can be safely administered to bears.

ARTHUR SVIHLA
AKIRA HORITA
Departments of Zoology and *Pharmacology*
University of Washington

[1] Acknowledgment is made to the Air Force under contract AF 33 (038)-18509 for aid and assistance in making this study.

The Peyote Cult

I WISH to express appreciation for, and to concur with, the communication dealing with peyote, signed by Messrs. La Barre, McAllester, Slotkin, Stewart, and Tax, in your November 30 issue. The subject is of importance to American Indians, to civil liberties, and to anthropology.

In late 1922, when federal and state proscriptions against the Native American (Peyote) Church were being pressed, the peyote cult members at Taos Pueblo laid their case before me. They offered (with an understanding of what was involved) to submit themselves individually and as a group to the fullest scientific investigation. They understood that such investigation would be pharmacological, biological, psychological, and social, and that it would involve experimentation, using part of their number as a control group.

In 1924, at the meeting of the Committee of 100 on Indian Problems (a Committee assembled by Secretary of the Interior Hubert Work), I reported this offer; a resolution was enacted, calling upon the National Research Council to plan and execute an investigation into peyote. The council never initiated this requested investigation.

Some years later, for the American Indian Defense Association, Donald Collier (at present a staff member of the Chicago Natural History Museum) canvassed all the then-existing literature on peyote, totaling some 400 published books and papers. His conclusion was identical with that set forth in the communication in SCIENCE.

Subsequently, in 1933, I became U. S. Commissioner of Indian Affairs. I introduced the above-mentioned analysis of the existing literature into the *Congressional Record* (the hearings, as I remember, of the House Sub-Committee on Interior Department Appropriations); and Secretary Harold L. Ickes and I prohibited absolutely any interference by the Indian Bureau with the religious practices of the Native American Church. We were abused in a good many quarters for this action; but the administrative