SCIENCE

VOL. 100 FRIDAY, AUGUST 18, 1944 No. 2590

SCIENCE: A Weekly Journal devoted to the Advancement of Science. Editorial communications should be sent to the editors of SCIENCE, Lancaster, Pa. Published every Friday by

THE SCIENCE PRESS

Lancaster, Pennsylvania

Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington 25, D. C.

DECIDUOUS FOREST MAN AND THE GRASSLAND FAUNA[1]

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I. INTRODUCTION

THE droughts and dust storms of recent years have called attention to the grasslands of central United States and Canada. Much has been written regarding the Great Plains on the subjects of (a) too extensive use of the plow, (b) overgrazing, (c) erosion. Remedies have been suggested, such as seeding with foreign and domestic grasses, special agricultural methods and the planting of shelter belts. There remains one factor in the disasters of the great plains that has not been evaluated or even adequately brought to attention, that is the sum total of original native animals of the grassland biotic community.

The grassland originally presented a fine array of grasses tall and luxuriant at the eastern edge and relatively short and hardy at the western. It originally presented an excellent group of animals living in a state of dynamic balance. But to the new human arrivals, the immense herds of bison merely meant free meat and free hides. As to the use of grassland animals by fur and hide seekers, noteworthy records are in the journals of Lewis and Clark (1804–05, Thwaites)[2] and of John C. Luttig (1812–13).[3] Lewis and Clark crossed the entire grassland area. The first grassland animals, notably the bison, were seen in southeastern South Dakota. The bison fitted the climate and grassland so well that its population (total, 75,000,000; Great Plains, 50,000,000) exceeded the

[1] Invitation paper read by title before the eighth American Scientific Congress, Section of History and Geography.

[2] R. G. Thwaites, "The Original Journals of the Lewis and Clark Expedition, 1804–1806." Vols. 1–3. New York, 1905.

[3] J. C. Luttig, "Journal of a Fur-trading Expedition of the Upper Missouri, 1812–13." Edited by Stella M. Druman. Missouri Hist. Soc., St. Louis. 1920.

the advantage of not damaging the egg membrane, as may occasionally happen with the rotary drill.

It is customary to hold the egg to be cut in one hand and the drill in the other. This method of handling is a source of difficulty. A drill, when used by one operator for any length of time, may provoke one or all of the following complaints: (1) uncomfortable warmth because of the heat generated by the motor and by friction, (2) the bulk of certain drills makes them awkward for those with small hands, (3) the weight of the instrument becomes tiresome, (4) muscles become cramped from gripping the drill tightly, and (5) shell fragments and dust get in the face and eyes of a right-handed person since the drills rotate in a counter-clockwise direction. These complaints are voiced as readily by those using the professional dental drill with a flexible shaft as by those using the small, compact, hand-sized motor drills or vibrating tool.

These factors we have eliminated by clamping the drill to a stand so that the person engaged in the work need hold only the egg. At the present time drills can not be purchased readily and repairs are not always possible; therefore, we have begun using the electric stirrers available in this laboratory.

An electric stirring motor, preferably one fitted with a rheostat, is clamped on a stand with the drive shaft in a horizontal or slightly tilted position at a height convenient for the operator. This height will generally be about 5 inches above the base of the stand. The drive shaft is pointed towards the operator's right so that the shell fragments and dust will be directed away from the operator. The usual mandrel and grinding stone are attached to the stirrer. The addition of a chuck or wrapping of adhesive tape to the mandrel may be necessary for its secure fastening. Care should be taken to center the mandrel so that the stone rotates without describing an arc in addition to its prescribed movement. Support for the hands is obtained by allowing them to rest on the table or base of the stand.

Skill in cutting the shell in this manner is acquired rapidly and the average person can prepare more eggs in a shorter length of time than is possible when both the egg and the drill are held in the hands. Women engaged in this work have welcomed the method.

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THE PREPARATION OF APOZYMASE FROM BAKER'S YEAST

THE determination of coenzyme I, according to the methods of von Euler[1] and Myrbäck,[2] later modified by Axelrod and Elvehjem,[3] depends upon the principle that the addition of coenzyme I to a washed yeast preparation (apozymase) will result in fermentation, the rate of which is proportional to the amount of coenzyme I added. The above workers have used brewer's yeast for the preparation of apozymase, as has Greig[4] in her simplified method of preparation.

We have recently been able to prepare an apozymase from baker's yeast (Fleischmann's) which is usually more easily obtained than is fresh brewer's yeast. It is prepared as follows:

To 1.5 liters of distilled water in a large beaker are added 100 gm fresh baker's yeast and 25 cc carbon tetrachloride. This mixture is stirred with a power stirrer for one hour, centrifuged, the supernatant discarded and the yeast dried overnight under a fan. When the yeast is thoroughly dry, it is resuspended in 2 liters distilled water and stirred for three hours. The mixture is again centrifuged, the supernatant discarded and the yeast dried under a fan. When dry the yeast is ground and stored in a desiccator.

The dry powder is stable at least a month. It may be added to the reaction vessel as a powder, or is easily suspended in water or phosphate buffer for pipetting.

Since this yeast is quite aerobic, oxygen uptake is still demonstrable after this method of preparation, and consequently the coenzyme I determination must be carried out in an atmosphere of nitrogen. With most preparations there is a latent period of one hour from the time at which the apozymase is introduced into the vessels until active fermentation begins. We have found that 100 mg of this preparation per vessel gives a CO_2 evolution of about 200 mm^3 per hour in the presence of 20 micrograms of coenzyme I.

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[2] K. Myrbäck, F. F. Nord and R. Widenhagen, *Ergebn. der Enzymforschung*, 2: 139, 1933.
[3] A. E. Axelrod and C. A. Elvehjem, *Jour. Biol. Chem.*, 131: 77, 1939.
[4] M. E. Greig, *Jour. Pharmacol. and Exper. Therap.*, 81: 164, 1944.

BOOKS RECEIVED

ABRAMS, TALBERT. *Essentials of Aerial Surveying and Photo Interpretation.* Illustrated. Pp. ix + 289. McGraw-Hill Book Company. $3.00.

FISHBEIN, MORRIS and LESLIE W. IRWIN. *Health and First Aid.* Illustrated. Pp. vi + 372. Lyons and Carnahan.

Science in the University. By Members of the Faculties of the University of California. Illustrated. Pp. x + 332. University of California Press. $3.75.