sincere endeavor to elucidate the problems connected with this disease.

One of the most interesting features of this very extensive and laborious piece of work is the discovery of a constantly low respiratory quotient in patients suffering from severe diabetes, which accords with theoretical expectations.

On page 211, the authors state that after giving beefsteak to a diabetic, "the excretion of sugar in the urine . . . was not sufficient to indicate the excretion of a large part of the non-nitrogenous portions of the steak in the urine." But the sugar rose from 3.1 grams per hour to 8.6, an increase of 5.5 at the same time that the nitrogen elimination rose from 0.57 to 1.25, an increase of 0.68 grams per hour, which corresponds to increased protein destruction of 4.3 grams! According to this computation, 5.5 grams of dextrose might have arisen from 4.3 grams of protein which certainly does not support the negation quoted above.

The reviewer is forced to disagree with the main contention of the book, that the heat production in severe diabetes is 15 per cent. higher than the normal. The error of Benedict and Joslin is twofold. In the first place, their group of normal individuals, nine in number, include three weighing respectively 74, 80 and 83 kilograms. These are not fairly comparable with diabetics weighing between 45 and 65 kilograms. In the second place, the high metabolism obtained from a diabetic individual weighing 45 kilograms who was "extremely highstrung, nervous and apprehensive," and "not an ideal subject," plays quite a part in the average results upon the diabetic patients. If the heavier, normal individuals be excluded, then six weighing between 48 and 67 kilograms produce 1.27 calories per kilogram per hour, and if the excitable diabetic be excluded, it is found that five individuals with severe diabetes and weighing between 49 and 65 kilograms, show an average heat production of 1.34 calories per kilogram, which is an increase of 5 per cent. above the normal, or about that obtained by other observers.

Graham Lusk

SCIENTIFIC JOURNALS AND ARTICLES

The contents of *Terrestrial Magnetism and Atmospheric Electricity* for March, 1911, are as follows:

"Two New Types of Magnetometers made by the Department of Terrestrial Magnetism of the Carnegie Institution of Washington," J. A. Fleming.

"The Peculiar Magnetic Disturbances of December 28–31, 1908," R. L. Faris.

"On a Variation in the Intensity of the Penetrating Radiation at the Earth's Surface Observed May 19 and 21, 1910," A. Thompson.

"Le Projet du Levé Magnétique de l'Empire Russe et les Travaux Magnetiques," M. Rykatchew.

"The Physical Theory of the Earth's Magnetic and Electric Phenomena. No. III. The External Electric Currents and the Earth's Magnetization," L. A. Bauer.

"Magnetic Storms Recorded at the Cheltenham Magnetic Observatory, October 1 to December 31, 1910."

"Atmospheric Electricity Observations on the *Belgica* in 1907," H. F. Johnston.

SPECIAL ARTICLES

NOTE ON A CONGLOMERATE DIKE IN ARIZONA

While mapping the surface geology of Silverbell, Pima County, Ariz., in connection with a study of the ore deposits of that district, the writer found a conglomerate dike which seems to differ enough from the majority of clastic dikes previously described to justify a short note on its occurrence and probable origin.

On a claim known as C. M. C. No. 4, about a mile north of the town, one of the many intermittent streams of the region has cut a gulch in a dark-colored quartz-porphyry. In the bottom of this gulch and running parallel to it is a vertical fissure from six to eight inches in width filled with a hard compact mass of fragmental material. The fragments are generally angular and vary in size from grains of exceeding fineness to pieces of rock two inches or more in diameter. The greater part of the material is the quartz-porphyry that forms the walls, but a variety of other igneous rocks known to occur in the hills beyond the head of the gulch is also notice-

able. The depth of the fissure is unknown, but the drop in the stream bed showed a downward extent of six feet in which there was no perceptible decrease in width. The dike is parallel to the jointing in the porphyry and can be traced for over fifty feet before it pinches out. It is marked by a number of pinches and swells, giving the formation the appearance of several long, thin, connected lenses of conglomerate standing vertically in the porphyry.

The obvious explanation is that a fissure in the igneous rock has been filled by stream wash, afterwards cemented by calcareous waters, but the origin of the fissure is by no means as clear. Many of the clastic dikes hitherto described have been attributed to the squeezing up from below of fragmental material, while in those filled from above there usually has been evidence of considerable local disturbances to account for the formation of the open fissure.[1] For reasons that can not be given here, but which will be given in a forthcoming paper on the district, it is fairly well established that there has been at Silverbell no recent rock movement sufficient to form open cracks in any of the rocks. It seems more probable that the dike in question represents the result of a joint plane enlarged by weathering, and filled in part by the products of this weathering and in part by sediment washed in by the stream. It is therefore a local feature, and bears no relation to the dynamics of the district, although superficially resembling clastic dykes that have been the result of distinct orogenic movements.

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NOTE REGARDING MAIZE FLOWERS

IT may be well to make here the preliminary announcement of some results obtained in the continuation of my studies of the evolution of the "ear" of Indian corn (maize) begun some years ago. It will be recalled that I published in the *Popular Science Monthly* for January, 1906, a paper entitled "What is an Ear of Corn?" in which I homologized the "ear" with the central spike of the ordinary "tassel," of staminate spikelets. Continuing my studies I have now found perfect flowered (hermaphrodite) spikelets in well-developed "ears" occupying the usual lateral position upon the plants. These are fully figured in a paper which is nearly ready for publication under the title of "Perfect Flowers in Maize." It is found that these are produced upon plants that differ markedly from the ordinary type of Indian corn (maize). They are short-jointed, with broad, leathery leaves, and I venture the suggestion that these plants may resemble in some degree the original form from which our common maize was derived. One of the photographs shows the remnants of an abortive second flower in the pistillate spikelet near the well-developed kernel taken from one of these perfect-flowered ears, indicating that these spikelets were once two-flowered.

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[1] J. F. Newsom, *Bull. Geol. Soc. Amer.*, Vol. 14, pp. 227–268, and M. R. Campbell, *Amer. Geol.*, Vol. 33, pp. 135–137.

THE INDIANA ACADEMY OF SCIENCE

THE twenty-sixth annual meeting of the Indiana Academy of Science was held in Indianapolis, Friday, November 25, 1910. The president of the academy, Professor P. N. Evans, chose as his subject for his annual address, "The Place of Research in the Undergraduate Schools." Forty-two regular papers were presented. Those of most general interest were as follows:

"Plants and Man—Weeds and Disease," Robert Hessler, of Logansport.

"Indiana Municipal Water Supplies," Charles Brossman, Indianapolis.

"Subterranean Drainage in the Bloomington Quadrangle," J. W. Beede, of Bloomington.

"Conservation Problems," Frederick J. Breeze, of Lafayette.

"The Properties and Reactions of Thrombin," L. J. Rettger, of Terre Haute.

"The Nature and Origin of the Fish Fauna of the Plateau of British Guiana," C. H. Eigenmann, of Bloomington.

"A Physiographic Survey of the Terre Haute Area," Charles R. Dryer, of Terre Haute.

"Paleolithic, Neolithic, Copper and Iron Ages