an average of $4.25 a ton, was obtained and sold from the coal-gas plants in 1915. Including by-product, the output of which in 1915 was 14,072,895 tons, valued at $48,558,325, the coke and retort carbon produced in the United States was 15,796,461 tons, valued at $55,964,239. The value of the tar, ammonia, benzol products, naphthalene and coke produced in the United States in 1915 was $80,816,975.

THE *Electrical World* notes that the great scarcity of potash has almost crippled many of the industries in this country, notable among others being the glass industry. The glass used in making incandescent electric lamp bulbs is a very special kind that must withstand sudden changes of temperature and also great pressure. Heretofore it has been thought that only glass made with a certain amount of potash was suitable for the lamp industry. The outbreak of the war two years ago cut off all supply of potash from Germany and threatened the supply of glass. The research chemists of the General Electric Company, however, succeeded in producing a glass for making incandescent electric lamp bulbs by replacing potash with soda in the glass mixture. This glass, it has been stated, has proved superior to the old potash glass; so much so, indeed, that from now on potash glass will no longer be used. The world supply of potash comes almost entirely from Stassfurt in Germany, because the natural deposits there have been cheaper to work than any other known source. The sources of supply in the United States have proved utterly inadequate to meet the great demand of the industries. Soda, on the other hand, is produced from ordinary table salt, great natural deposits of which are to be found in different parts of the country.

UNIVERSITY AND EDUCATIONAL NEWS

DR. THOMAS F. HOLGATE, professor of mathematics in Northwestern University and dean of the college of liberal arts, has been elected by the trustees *ad interim* president of the university, on the recommendation of the council of deans.

DR. JAMES R. CLEMENS has been elected dean of the John A. Creighton Medical College, Omaha.

DR. A. I. RINGER, formerly assistant professor of physiological chemistry at the University of Pennsylvania, has been appointed professor of clinical medicine (diseases of metabolism) at the Fordham University School of Medicine, New York.

DR. LEON F. SHACKELL, of Washington University, has been appointed an instructor in physiology at the University of Utah Medical School, Salt Lake City.

DONALD W. DAVIS, Ph.D., of De Pauw University, has been appointed professor of biology in the College of William and Mary, and is succeeded at De Pauw University by Hardin R. Glascock.

AT the State University of Iowa, George Bain Jenkins has been appointed professor of anatomy, and Vive Hall Young, assistant professor of botany.

DISCUSSION AND CORRESPONDENCE

THE SONG OF FOWLER'S TOAD (BUFO FOWLERI)

VARIOUS observers have described the voice of Fowler's toad. All descriptions indicate that only its characteristic, weird, droning scream has been heard.

Allen, speaking of the common toad in New Hampshire, believed that the toad's song changed from a prolonged trill to the weird note produced by Fowler's toad. He says:

> After the breeding season the toad's song changes from a prolonged pipe to a shorter, lower-toned note that, at night, has a peculiar wierdness and almost reaches a wail.[1]

Until recently the writer was convinced that Fowler's toad possessed but one song, the unmistakable, weird, wailing scream which advertises its presence throughout its range. It is now known that some individuals produce a

[1] Allen, Grover M., "Notes on the Reptiles and Amphibians of Intervale, New Hampshire," *Proc. of the Boston Soc. of Nat. Hist.*, Vol. 29, No. 3, 1899, p. 71.

prolonged trill resembling the characteristic song of the common toad.

While living at Clarendon, Va., near Vinson Station, the writer every spring has heard the steady, trilling monotone of a toad which he believed to be the common toad, *Bufo americanus*. These notes were among the first batrachian voices to be noted in springtime and were uttered more or less intermittently throughout the greater part of May. On May 2, 1916, the writer established the identity of the toad producing these trilling notes. Several[2] of these toads were captured in the filthy stream just north of Steele's Barn, near Vinson Station; others were captured in the stagnant pools along Fort Avenue, near Maple Street. These toads produced the steady, trilling monotone resembling the song of *Bufo americanus* as it is heard in New England. Although the trill of *Bufo americanus* sometimes continues for 30 seconds or longer, the trill of the toads captured near Vinson Station lasts only from 10 to 20 seconds. Although very variable in size, markings and general coloration, these toads are unquestionably Fowler's toads and can not be distinguished from individuals producing the typical, droning scream which lasts only for 2 to 3 seconds. Individuals producing these notes were captured at the same time and in the same localities.

The iris of both forms is bronze. Although Miller and Chapin[3] are of the opinion that the iris of *Bufo americanus* is bronze and the iris of *Bufo fowleri* is silvery in color, it is evident that such distinctions can not be relied upon in the diagnosis of the two toads.

It is hard to explain why some individuals of *Bufo fowleri* produce a steady, trilling note while others produce a brief, droning scream. These vocal differences, however, are in some manner correlated with fundamental differences of physiology and habit, since the trilling form is first to appear in spring and is rarely heard when the typical mating song of *Bufo fowleri* begins. In 1915, the brief, droning scream of *Bufo fowleri* was not heard at Clarendon, Va., until May 2. The trilling form is always heard early in April, several weeks before this period. After May 15 the trilling form is rarely heard, while the form with the brief, droning scream is heard until August.

The range of Fowler's toad has yet to be clearly established. The writer found this toad extremely common at Thompson's Mills, in northern Georgia. Whether or not this toad occurs in the Coastal Plain region of this state, or extends its range into the Gulf States, is not known. The westward distribution of Fowler's toad has also to be determined. Nothing definite is known concerning the relationship of this toad to *Bufo americanus* in the north, or to *Bufo lentiginosus* in the south.

H. A. Allard

Washington, D. C.

[2] These toads are now in the collection of the U. S. National Museum under accession number 59692.

[3] Miller, W. De W., and Chapin, James, "The Frogs of the Northeastern United States," Science, N. S., Vol. 32, No. 818, September 2, 1910.

Better Coordination of Undergraduate Courses

To the Editor of Science: A questionnaire recently circulated among alumni by the University of Minnesota (J. B. Johnson, dean), includes a call for suggestions as to the better preparation of students for public service. As the following proposal is not really limited to that application, but appears to be of a character to which the columns of Science have been open, I respectfully submit it for publication or other disposition as may to you seem fit:

Provide, in undergraduate courses and even at great expense, for "*laboratory*" *use* of that modern language elected by any group of students carrying at the same time (say) French or German and (say) physics, chemistry, animal biology, or history of European diplomacy.

When in college, the undersigned was not alone in wishing that the assistants in charge of laboratory hours would give their directions in, *e. g., French*—resorting to English only as might be rendered necessary by a student's failure otherwise to comprehend. The carrying out of this proposal would of course re-