physiological chemistry at the University of Tübingen, has been appointed professor and director of the institute of agricultural chemistry at the Agricultural High School at Hohenheim.

DR. FELIX HAFFNER, of Munich, has been appointed professor of pharmacology at the University of Königsberg to take the place of Professor H. Wieland, who has retired.

DISCUSSION AND CORRESPONDENCE

SOLAR VARIATION AND THE WEATHER

IN the New York *Times'* issue of July 26, Dr. McAdie, director of Blue Hill Meteorological Observatory, reviews three papers by Messrs. Clayton, Hoxmark and Abbot recently published by the Smithsonian Institution. Like many others, for instance, Floyd W. Parsons in the *Saturday Evening Post* of July 25, Dr. McAdie appears to understand that persons connected with the Smithsonian Institution have predicted cool or disastrous summers for 1925, 1926 and 1927.

This is not the case. No person connected in any way with the Smithsonian has ventured any such excessively long-range forecasts or knows of any method of making them. This mistake arises from confusing with us Mr. Herbert Janvrin Browne and perhaps others who have no connection at all with the Smithsonian Institution, though they claim to make use of some of our results. We disclaim all responsibility for their forecasts.

The story we told in the three articles referred to was mainly twice told, once by their texts, and again by their illustrations, but yet Dr. McAdie does not appear to have grasped it. Certainly he has not clarified it for his readers, and therefore I venture to do so. Perhaps Dr. McAdie, as they say, failed to see the forest because it was obscured by the trees.

What we told is essentially this: Measurements by the Smithsonian Institution of the sun's rays available to warm the earth have been going on for twenty years. Since 1918 they have been made on every possible day at our Chile observatory, and since 1920 have also been made at our Arizona observatory. Prior to that, and from their inauguration in 1905, they were made, during part of the year only, at Mount Wilson, California. The duplicate daily results since 1920 agree within one half per cent., and combine to indicate decided variability of the sun.

Some authorities still doubt the adequacy of our proof of the sun's variability. In the paper by Abbot, their objections are discussed, and many confirmatory evidences tending to support the view of the variability of the sun are given.

If the sun varies, the earth's weather ought to vary, too. Mr. Clayton has examined this question for more than ten years, first while official forecaster of Argentina, and since 1923 privately, with financial support by Mr. John A. Roebling, and working in cooperation with the Smithsonian Institution.

As early as 1917, Clayton appeared to find definite relations between the solar changes reported by the Smithsonian Institution and weather changes in all parts of the world. He reduced these relations to a system of weekly forecasting which was adopted officially in Argentina in December, 1918, and is still used there.

Hoxmark, who succeeded Clayton as Argentine official forecaster, gives in his paper the degree of success in making definite forecasts of temperature and rainfall for Buenos Aires each week since he assumed charge in 1922. He employs the much-used mathematical method of correlations in comparing the predictions with the events, because it is independent of personal bias. One does not see why Dr. McAdie should make fun of so sensible a procedure. The Argentine official weekly forecasts, while by no means perfect, are in the right direction by far the most of the time, and are *sold*, not given away, to satisfied customers.

Clayton's paper reports his recent studies of the weather of the United States in its relations to the apparent solar changes. Having found clear evidences of many such relations, he has reduced his results to a system of forecasting of temperatures for the city of New York. To make a rigid test, he had, for over a year, forwarded daily to the Smithsonian Institution definite forecasts of daily New York temperatures three, four and five days in advance, average weekly temperature departures forecasted two days before the beginning of each week, and average monthly temperature departures forecasted two days before the beginning of each month.

The Smithsonian Institution has compared these forecasts with the events for a period exceeding one year, and finds by mathematical methods, altogether without opportunity for personal bias, that a real foreknowledge by Mr. Clayton is exhibited.

It is true that the correlations are not high. The relations between solar variation and the weather are highly complicated. Much more work and study are required to make them clearer. Moreover, the accuracy and fullness of the solar data are still not adequate to the purpose. Fortunately the National Geographic Society has recently financed the installation of a third solar observatory to be located in the eastern hemisphere and to cooperate with the two in Chile and Arizona. If further studies by Clayton and others seem to warrant going on with this new departure in weather forecasting, it is to be hoped

that funds may come from some source to set up still a fourth solar station.

The Smithsonian Institution has no intention of making public forecasts. That is the province of the Weather Bureau. But it is hard to see why an honest effort to test the value of hitherto unused data for forecasting purposes should receive anything but kindness from meteorologists.

Yours faithfully,

C. G. ABBOT,
Acting Secretary

SMITHSONIAN INSTITUTION
SEPTEMBER 1, 1925

TERTIARY GLACIATION IN WYOMING, COLORADO AND UTAH[1]

SINCE 1914 the origin of erratic boulders up to twenty feet long on Green Mountain and elsewhere in Central Wyoming, at altitudes of about 8,500 feet, had been an unsolved problem until June, 1925, when definite evidence was found of glacial deposits of mid-Tertiary age. A fresh grade on the state highway five miles west of Alcova, Wyoming, exposed good glacial débris with boulders exhibiting excellent striations and scoured faces. This débris definitely occurs beneath the White River formation, classed as Oligocene. Elsewhere in the Sweetwater Valley the glacial boulders rest on Eocene formations.

The glacier leaving these big erratic rocks originated on the Wind River Mountains and extended at least 125 miles toward Casper.

Definite glacial débris nearly 1,000 feet thick on Diamond Peak, Colorado, and Uinta quartzite boulders twenty feet long, showing grooved flat faces, on Aspen Mountain, Wyoming, prove the glacial origin of the Bishop conglomerate, which is older than the Brown's Park and younger than the Green River formations. The Bishop occurs all around the Uinta Mountains.

The smoothed outcrops of the pre-Cambrian granite near Encampment, Wyoming, and boulder beds beneath the North Park formation at Walcott indicate mid-Tertiary glaciation off the Medicine Bow Range.

Large boulders with peculiarly flattened faces, as if ice-scoured, at the bottom of the Castle Rock conglomerate and on Green Mountain are thought to be traces of the same glacial epoch in the Denver Basin.

The possibility of the Kingsbury conglomerate and other singular boulder deposits in the Rocky Mountains being a phase of this glaciation is recognized, which when carefully studied will perhaps prove extensions of the discovery of an important epoch of glaciation in post-Eocene and pre-Miocene time, and if certain beds are Oligocene, then it is also pre-Oligocene.

C. J. HARES

CASPER, WYOMING

[1] Preliminary communication.

AN OBVIOUS NEW CASE OF POLYEMBRYONY

MORPHOLOGISTS in general are so greatly interested in polyembryony that all new cases should be advertised.

In the August, 1925, number of the *Journal of Economic Entomology*, Mr. S. J. Snow, of the Bureau of Entomology, in an article entitled "Observations on the cutworm, *Euxoa auxiliaris* Grote, and its principal parasites," records the rearing of an encyrtid parasite of this cutworm which is, very obviously, polyembryonic, since from 1,068 to 1,511 individuals were reared from a single cutworm.

The species is *Berecyntus bakeri* Howard. The observation is not surprising, since this parasite is related to the Copidosoma originally studied by Marchal, although it has a very different *facies*.

Incidentally, attention should be called to J. Waterston's paper entitled "A new polyembryonic encyrtid, *Copidosoma tortricis*, a parasite of *Tortrix comariana*," published in the *Annals of Applied Biology* for September, 1922.

L. O. HOWARD

U. S. DEPARTMENT OF AGRICULTURE

THE "HARMLESS" CORAL SNAKE

ERROR as well as truth has the faculty of repeated rising after frequent crushing. Certain misinformation has such capacity for harm that the task of the cynic becomes indistinguishable from that of the philanthropist and at the reappearance of the hoary falsehood of the harmless coral snake it becomes meet, right and our bounden duty to do all that in us lies to blast it as publicly as possible.

Some twenty-five years ago Kipling wrote "Rhinegelder and the German Flag," a story of a collector in Venezuela who, misled by the published statement of an American authority, thought nothing of being bitten by a coral snake and so died. His last bitter words as he felt his arm and realized his position might serve as a text. "It is genumben to der clavicle. I am a dead man, and Yates he haf lied in print."

In Newman's recent "Vertebrate Zoology," on page 257, there is the following statement: "The coral snakes are said to be extremely poisonous, but their biting apparatus is so constructed that they can not open the mouth wide enough to bite a human being so that they may be set aside as harmless, so far as man is concerned."