

### A plea for civilian control of the U. S. weather-bureau.

A recent discussion of the value of the signal-service weather-predictions was begun in the *Boston Transcript* by a letter from a Boston lawyer. A portion of the letter is here given:—

"To the editor of the *Transcript*. It would seem that it is time to call for a termination of the farce of publishing the official weather-prognostications, at least so far as the neighborhood of Boston is concerned. Whoever is in the habit of looking in the morning paper to find what weather is promised for the day must have been much impressed of late with the faculty for getting it all wrong, which the Washington bureau appears to possess. [Here follows a whole list of notable failures within a month.] In conclusion, I will only ask whether a 'weather-bureau' which produces such failures as these is worth the cost of its maintenance? It may claim, indeed, that it has sometimes prophesied right, but a man in a dark closet could not possibly have guessed always wrong."

A number of letters followed this from different persons, all of which agreed in regard to the inefficiency of the signal-service predictions; and this, I think, voices the general sentiment of the New England people. I had so frequently heard people last year, when they were speaking of the signal-service predictions, say, 'Anybody could guess at the weather,' that the question presented itself, Why was it, that, in face of the fact that the official bulletins claimed eighty or even ninety per cent of successful verification, the average New Englander had arrived at the conclusion that the signal service merely guessed at the weather? It occurred to me that the popular measure of success was not what per cent some arbitrary method of verification gave, but rather how much better were the predictions than those which could be made by people ordinarily without instruments of any kind?

In order to test this, I had Frank Brown, an intelligent steward of Blue Hill observatory, make weather-predictions at sunset for the following twenty-four hours on each day from last March to July inclusive. These predictions I recorded when made, and carefully verified them in accordance with the rules given by the signal service to voluntary observers for verifying the signal-service predictions. I then compared his predictions with those of the signal service, verified in the same manner, and I found that each month he obtained from three to ten per cent higher success than the signal service.

In order not to confine the test to one person alone, I asked Mr. and Mrs. Davenport, intelligent persons living near Blue Hill, but who claimed to know nothing about the science of meteorology, to make weather-predictions during the month of June. These predictions were made at sunset for the twenty-four hours beginning at midnight, and were based on the appearance of the sky alone without any instruments. These predictions were received and recorded when made, and the end of the month showed that the predictions of each, though slightly different, were eighty per cent verified, while the signal-service predictions during the same time were only seventy-seven per cent verified.

These results clearly show why many people do not regard the signal-service predictions as of value.

It would occupy too much space to attempt to show why the signal-service method of verification makes them appear to gain such high success: suffice it to say that many of the cases which, according to the rules adopted, must be recorded as successful, are most glaring failures.

During the last few months I have endeavored to ascertain the causes of the many failures in New England of the signal-service 'indications;' and I find in the position of New England between the lakes on one side, and the ocean on the other, I think, a fruitful cause of the failures of the signal service. We find from local observations here in Boston, that, when a storm approaching from the west passes over, the sky begins to clear almost immediately after the passage of the line of minimum pressure. But on a synoptic chart it is frequently found, that even though the centre of least pressure is off on the ocean, it is raining or snowing at certain lake stations, such as Marquette, Oswego, etc.; and the explanation is apparent, for the circulation of the wind is such as to drive the air across the great lakes to these stations, where it arrives laden with moisture and ready for precipitation. The signal service, ignoring all local influences, and basing their predictions on the eastward movement of weather-changes, predict over and over again rain or snow for New England, which, under such conditions, seldom arrives.

Again: an area of high pressure, approaching New England from over the Lakes, may be attended by fair weather; but immediately it arrives over the Gulf Stream, and begins to force air on the land from the north-east or east, rain begins; and numerous failures of the signal service can, I think, be traced to this cause.

I have not confined my studies of the signal-service predictions to New England, but have closely watched them over other parts of the country; and I have become convinced that the predictions are based almost entirely on the eastward movements of weather-changes, with but little regard to local influence, or to the facts elicited by the splendid researches during the last ten years of Loomis, Van Bebber, and a host of others. In other words, the science of weather-predicting in the United States has not advanced a step since the days of Joseph Henry and Espy. This, I believe, has largely if not entirely resulted from the military control of the weather-bureau. Conventional routine, and action without questioning, is a necessary part of military training, and it has produced its fruits in a blind following of a few rules and a consequent want of advance in military weather-predictions. Not only does the military organization fail to give the best results which might at present be obtained, but I believe it is immensely detrimental to the advance of meteorology to a higher and more scientific position. In Europe the men in charge of the weather-services are scientific men, who not only do their present work well, but, sustained and enthused by their work, are investigating the difficult problems which present themselves, and thus pushing meteorology to a higher and more scientific stand-point.

Nor do I think the detriment of the military organization ends with the predicting department. I have known personally a number of bright young men, intensely interested, and trained in science and scientific methods, who were kept out of the signal service on account of the military organization.

These men were aware of their ability to earn an ample sustenance in the world, and did not care to release their liberty and undergo whatever indignities might be cast upon them in a military organization. Twice recently intelligent sergeants of the signal corps have said to me that "for the salaries paid to our observers we could obtain some of the most intelligent men in our city: whereas we now have to put up with much less effective work." One of these told me of an assistant in his office who, on a very clear night, recorded the Milky Way as thin clouds moving slowly from the west. Of course, such men in the signal office as fear that they would lose their position by the transfer of the bureau to civilian control are bitterly opposed to the change, and several have given me this very reason for opposing the transfer.

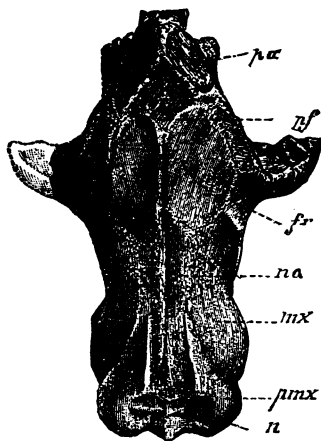
That this communication may, in the present crisis, do something toward influencing the change to civilian control, which I believe so much needed, is my earnest hope.

H. HELM CLAYTON.

Blue Hill meteor. observ.,  
Jan. 30.

### The pineal eye in *Tritylodon*.

The accompanying cut represents the top of the skull of the remarkable mammal *Tritylodon* Owen. It is reduced to two-thirds natural size, the genus being much larger than any other hitherto known from the mesozoic period. In the interval between the parietals and frontals, *pa* and *fr*, is seen the parietal foramen, *pf*, which has exactly the same position and relations as in the lizard genus *Sphenodon*. In my communication to *Science*, Jan.



28, I spoke of this foramen which lodged the pineal eye "as greatly exceeding that of any of the recent lizards in relative diameter." I find, upon examining the *Sphenodon* skull, that this is a slight exaggeration, and for the words 'relative diameter' should be substituted 'actual diameter.' Even with this limitation, the fact is of remarkable interest, and adds to the rapidly accumulating evidence for the reptilian ancestry of the mammals.

HENRY F. OSBORN.

Princeton, Feb. 1.

### Simple qualitative test for artificial butter.

Professor Scheffer (*Pharm. Rundsch.*, 1886, iv. 248) has proposed the following test for distinguishing between genuine and artificial butter: a mixture is made containing 40 volumes of rectified amyl-alcohol and 60 volumes ether of .725 specific gravity at 15°. One gram of butter-fat is dissolved in 3cc. of this mixture at 26–28°. On the other hand, 1 gram lard requires 16cc. of the solvent, 1 gram tallow 50cc., and 1 gram stearin 550cc. For the experiment take a test-tube of 12cc. capacity, and place in it 1 gram fat, add 3cc. of the fusel oil-ether mixture. After tightly corking the tube, put it in a water bath of 18°, and with frequent shaking bring the temperature to 28°. If the butter is pure, the solution becomes perfectly clear at this temperature. If not clear, more of the solution can be run in out of a burette, and the additional quantity required will be some indication of the quantity or quality of the adulterant which has been used.

According to Scheffer, mixtures of pure butter and lard gave the following data:—

Butter.	Lard.	Quantity of mixture required.
1 gram	—	3.0cc.
.9 "	.1 gram	3.9 "
.8 "	.2 "	4.8 "
.7 "	.3 "	5.7 "
.6 "	.4 "	6.5 "
.1 "	.9 "	14.4 "

A trial of this method has shown that it is capable of giving valuable qualitative indications as to the purity of the sample under examination. I believe it is the best simple test, capable of general application, which has been proposed. I have adopted a simpler method of getting sensibly constant weights than the one recommended above. The butters or substitutes to be examined are melted and filtered in the usual way to remove salt, water, etc. A 1cc. pipette is used to measure out the fat, which will be sensibly .9 of a gram. All the graduated apparatus necessary for this test is, therefore, a 1cc. and 3cc. pipette.

The theory of the test is, that tri-stearin is less soluble in the amyl-ether mixture than the other butter-fats, and that the fats used as butter-substitutes contain more of this substance than pure butter. The test is chiefly valuable for its simplicity and wide application.

H. W. WILEY.

Washington, Jan. 28.

### German constructions.

I should like to ask your correspondent, Mr. Eggert, if he supposes there exists any other language admitting of so horrible a construction as the placing-together of *six* pronouns in immediate contact?

"O du der du mich dem ich so zärtlich liebe!"

It is true that German writers of to-day show a material gain in clearness over most of those who wrote a hundred years ago, and this is doubtless owing to the increased familiarity of educated Germans with the shorter sentences and less parenthetical forms of construction used in English and French.

M. CAREY LEA.

Philadelphia, Jan. 27.