experiments had been carried out with the necessary care.

(5) In these investigations we considered it sufficient to divide the mice to be used in the castration experiments into age groups covering in some cases two, in other cases three months periods. For statistical purposes, I combined these mice into one class, including the mice between three and six months of age. However, Miss Lathrop kept a record of the time of birth of each litter used in our work on the heredity of cancer in mice, and there is no justification for the conclusion on the part of Murray that such records were not kept. As to the mice which were castrated at this age (between three and six months), they had been prevented from breeding previous to the operation; but if, contrary to our plans and knowledge, they should have bred, the result of castration in preventing the development of mammary cancers in these mice would have been the more striking.

(6) In conclusion I may state again that the investigations, on which Murray reports, without exception represent the type of experiments which I had carried out previously and that through this earlier work the significance of the various internal secretions, given off by the ovary, for the development of mammary cancer in mice had been proven.

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THE RING METHOD IN CHANGING SURFACE TENSION

I HAVE just seen a very excellent paper by S. L. Bigelow and E. R. Washburn, published in the *Journal of Physical Chemistry*, on "Variations in the Surface Tension of Solutions."

It is a great pleasure indeed to read such a reliable and conscientious piece of work. I hope the authors will find it natural that I should explain a statement which I made somewhere and which they quote as "remarkable," not in the complimentary sense of the word, I am afraid. The sentence read: "It is only through the ring method that it is possible to observe and study this phenomenon (changing surface tension) as it is the only procedure which permits the measurement of surface tension of the same layer of liquid at very short intervals." This statement is not accepted by the authors of the paper, who decide that it is "manifestly in error," and they are quite surprised that I should have found anything by this method.

In the first place, they are right, as it is obviously not the "only" method whereby such changes can be observed, but I maintain that it is the only one which, as I said, makes readings possible at "very short intervals." Of course we may not call "very short intervals" the same thing. What I meant were intervals of the order of one second and less. I have published in my book experiments where eight measurements were taken in the first minute. The technique is described in the same volume. That, I still believe, is impossible with the capillary method. Furthermore, if Messrs. Bigelow and Washburn had read the aforesaid book carefully, they might have understood how it was I managed to observe phenomena which they confirmed: "Pulling off a ring, they say, and replacing it must seriously upset any molecular arrangement in the surface . . ." Well, it does, but I did not always pull it off and replace it. I used a different sample of the same solution for every measurement. The ring was pulled off only once.

However, I must add that, even when such precautions are not taken, the phenomenon of time-drop can be followed, but not as accurately, of course.

LECOMTE DU NOÜY

INSTITUT PASTEUR, PARIS

"NUTRILITES"

THE term "vitamine" was introduced by Funk to designate those unknown factors in nutrition which were thought to prevent various diseases. This term with a modified spelling has become widely adopted in spite of its obvious defects. The term has been applied in some cases to unknown substances which in small amounts are effective in the nutrition of fungi (including yeast), bacteria and other organisms. At present, however, the tendency is to restrict the use of the word "vitamin" entirely to substances concerned in *animal* nutrition.

The word "bios" was introduced by Wildiers to designate an unknown substance which in small amounts stimulates yeast growth. The word "auximones" was likewise introduced by Bottomley to designate substances of a similar nature which were thought to be effective in the nutrition of certain green plants. It is increasingly apparent that there are unknown factors which function in the nutrition of many types of organisms. It is also obvious that there is need for a general term to designate these factors. Otherwise it will be necessary to invent new names for substances found to be effective in the nutrition of bacteria, molds and other forms of life. None of the terms in use at present applies.

It is suggested that the word "nutrilite" be used to designate all those vitamin-like substances which in small amounts function in the nutrition of organisms in general. The term has the advantage that it indi-

cates that the substances function in nutrition, but does not indicate in advance of our knowledge *how* they function. The term makes no extravagant claim as to the indispensability of the substance or to any peculiar relationship to life, as unfortunately the terms "vitamin" and "bios" do. In form the new word is similar to the word "metabolite." There is a closely related word already in the dictionary, "nutrility," which pertains to nutrition, but is rarely used.

We may then define a nutrilite as a substance, other than the well-recognized nutrients, which functions in small amounts in the nutrition of organisms. It is to be expected that borderline cases will appear in which it will be difficult to decide whether or not the material in question should be regarded as a nutrilite. This will not seriously impair the usefulness of the term, however, since a similar situation exists in the case of many words such as, for example, "carbohydrate" and "alkaloid."

ROGER J. WILLIAMS

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AN ANCIENT WALRUS SKULL

A RATHER interesting find, in the nature of an ancient walrus skull, recently made on Georges Bank off Cape Cod, has been presented to the Boston Society of Natural History. The skull, consisting of the fore part with tusks, which are twelve and fourteen inches long, and most of the flat-crowned crushing teeth of the upper jaw still in place, belongs to an animal now unknown as far south as the New England coast.

It has not been determined how this skull came to be on the bank, nor is it known how long it may have lain on the sea bottom, but it is probable that it came there two hundred and twenty or three hundred years ago. The walrus occurred, during the Ice Age, as far south as Virginia and the Carolinas, where fossil remains have been reported; in the seventeenth century it was found on Sable Island, off the coast of Nova Scotia, while during the last century it was quite common in the Gulf of St. Lawrence and on the shores of Labrador. It is quite possible at that time some of them may have visited the waters of the Gulf of Maine, or even strayed as far south as the Georges Bank, and that the specimen recently found belongs to one of these.

BIRGER R. HEADSTROM

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THE ROYAL PHOTOGRAPHIC SOCIETY

The Royal Photographic Society of Great Britain is holding its seventy-third annual exhibition in September and October of this year. It is hoped that the American representation in the scientific section will be such as to demonstrate the place held by this country in applied photography. I am collecting and forwarding American work for the scientific section again this year. Exhibits should consist of prints showing the use of photography for scientific purposes and its application to spectroscopy, astronomy, radiography, biology, etc. Photographs should reach me not later than June 8, and should be mounted but not framed. There are no fees.

A. J. NEWTON

EASTMAN KODAK CO.,
ROCHESTER, N. Y.

LOW HUMIDITY AND HIGH TACITURNITY

ARIZONA is perhaps best known in the demi-lands of letters as the abode of strong, silent men. So steeped in sentimentality is the lore of their laconism that a pragmatic interpretation has become imperative.

The low humidity of Arizona is almost as proverbial as the silence of her strong men. This is no mere fortuitousness. For low humidity begets parched throats, and it is axiomatic that a desiccated larynx and a vociferous tongue are incompatible.

A practical application suggests itself. Repression of verbosity has been, at times, a problem of national concern, actually jeopardizing the Senate rules. The atmosphere of the district is notoriously humid, and in such an environment loquacity thrives. But to euthenics there is available an effective antidote, a local anesthetic of uncanny selectivity. Even the most garrulous of filibusters could be silenced quickly by the aid of a potent air-dehumidizer.

E. A. VUILLEUMIER

DICKINSON COLLEGE

REPORTS

HORIZONTAL VERSUS VERTICAL FORCES IN CRUSTAL MOVEMENTS OF THE EARTH

PROFESSOR BAILEY WILLIS, of Leland Stanford University, and now president of the Geological Society of America, addressed the Boston Geological Society on January 11, 1928, on "Horizontalist or Verticalist?"

The doctrine of the direction of forces causing diastrophism is a question of faith. Willis stated that he was brought up a horizontalist, and in 1876 G. K. Gilbert had told him to study Appalachian structure, and he was carried far in seeing the effects of horizontal thrusting. On later expeditions into the Alps, the Andes and into Patagonia Willis found his faith in horizontalism supported. Later he went to California, where Gilbert had studied the structure of