to the question of mammalian longevity. The retarding effects of D_2O on the growth of mice bearing tumor transplants were demonstrated by Barbour and Allen.[4] One fifth saturation with deuterium oxide retarded the growth of both tumors and hosts, the latter showing shorter survival periods than the H_2O controls. A number of other mice have for several months tolerated one fifth saturation with D_2O, without evidence for enhanced longevity.

More significant is the fact that while the obelia offers evidence for decreased catabolism in low forms of animal life, mammals respond to one fifth saturation of deuterium oxide by catabolic stimulation persisting for many days.[5] Such difference in mammals may be attributable to checks and balances acquired in their phylogenetic development, as are, for example, provided by the elaboration of hormones. Now, deuterium oxide, presumably by providing a slow-acting form of hydrogen, protects and "prolongs the life" of at least two of these unstable hormones, namely, epinephrine[6] and acetylcholine.[7] The first of these has been found responsible for the metabolic increases, up to +20 per cent., which tend to make the mice "live faster" rather than slower.

Therefore, although deuterium oxide retards growth and anabolism and in toxic concentrations even delays catabolism in all forms of life so far examined, it is not to be expected that mammals enjoying the luxury of partial saturation with this substance will exhibit enhanced longevity.

H. G. BARBOUR

YALE UNIVERSITY
SCHOOL OF MEDICINE

F. S. HAMMETT

LANKENAU HOSPITAL
RESEARCH INSTITUTE,
NORTH TRURO, MASS.

HEPARIN AND BLOOD CLOTTING

THERE recently appeared an article in which Astrup[1] confirmed our observation[2] that normal plasma contains an unknown factor, which, in conjunction with heparin, blocks the transformation of prothrombin into thrombin. Both his work and ours showed that heparin alone has little or no effect in blocking this reaction—a finding which conforms to the earlier experiments of Mellanby[3] and Quick.[4] However, in mixtures containing both the plasma factor and heparin, our work and that of Astrup showed that marked inhibition of thrombin formation results.

In a recent note in this column, Ferguson[5] discussed these results, and indicated, erroneously, we believe, that Howell and Holt's[6] original work had brought out all these same facts. It is true that they did find that the *destruction* of thrombin by heparin requires a plasma factor ("pro-antithrombin"), but they believed that heparin interfered *directly* with the conversion of prothrombin into thrombin (antiprothrombic action of heparin). Our work and that of Astrup has brought out the new concept that a plasma factor is needed for this inhibitory action of heparin.

Although we have suggested that this new plasma factor and the pro-antithrombin of Howell may be identical chemically, as yet no data are available on this point and the question must be left for future work.

K. M. BRINKHOUS
H. P. SMITH, JR.
E. D. WARNER
W. H. SEEGERS

DEPARTMENT OF PATHOLOGY,
STATE UNIVERSITY OF IOWA

MASTODON REMAINS FOUND IN WEST VIRGINIA

ON Monday, October 9, there was brought to the biological laboratories of Bethany College the proximal portion of a long bone, too large to be that of any local domesticated animal. This bone fragment had been uncovered and picked up by a Mr. Funk, the operator of a steam shovel engaged in stripping coal about two miles west of Bethany, W. Va., in Brooke County, on a tract of land known as the Pendleton Farm and owned by a Mr. Petzol, of Hollidays Cove, W. Va.

The undersigned went immediately to the stripping operation and there found a number of other fossilized bones, as well as a portion of a tooth. These materials were removed to the biological laboratories of Bethany College. Dr. Leroy Kaye, paleontologist of the Carnegie Museum, Pittsburgh, Pa., was called into consultation and it was agreed that these were parts of a skeleton of the American mastodon.

The skeleton remains were found in a deposit of blue clay about 18 feet below the surface. This layer of clay was 6′ 3″ in thickness. It was probably a Pleistocene deposit. This layer contained an abundance of Gasteropod and Pelecypod fossils, as well as numerous pieces of fossilized wood. Overlying this was another layer of yellow clay of a gravelly nature,

[4] H. G. Barbour and E. Allen, *Am. Jour. Cancer*, 32: 440–446, 1938.
[5] H. G. Barbour and L. E. Rice, *Jour. Pharm. Exp. Therap.*, 62: 292–300, 1938.
[6] H. G. Barbour, Internat. Physiologen-Kongr., 16, Zurich, 1938, *Kongressber.*, pt. 2, 34–35.
[7] H. G. Barbour and V. C. Dickerson, *Jour. Pharm. Exp. Therap.*, 65: 281–286, 1939.
[1] T. Astrup, SCIENCE, 90: 36, 1939.
[2] K. M. Brinkhous, H. P. Smith, E. D. Warner and W. H. Seegers, *Am. Jour. Physiol.*, 125: 683, 1939.
[3] J. Mellanby, *Proc. Roy. Soc. B.*, 116: 1, 1934.
[4] A. J. Quick, *Proc. Soc. Exp. Biol. and Med.*, 35: 391, 1936.
[5] J. H. Ferguson, SCIENCE, 90: 272, 1939.
[6] W. H. Howell and E. Holt, *Am. Jour. Physiol.*, 47: 328, 1918.

approximately 11′ 6″ in thickness; both overlay a thick stratum of shale above a vein of Pittsburgh coal.

A study of the geology of the region revealed that in the geological past the bed of clay formed the bottom of an ancient stream bed. Fortunately the mining operations cut across the strata, thus revealing the geological history quite definitely.

The portions of the skeleton recovered thus far consist of the heads of both femurs, the proximal end of the humerus, a practically complete right scapula, a number of foot and toe bones, together with portions of the vertebra. A number of other bony fragments are in the laboratories and will be assembled later.

Two large fragments of a molar were found and these have been fitted together. The figuration of the tooth and the marks established the identity of this animal definitely as a mastodon.

To the best of our knowledge this is the first report of the finding of mastodon remains in this section of the State of West Virginia. Thirty-seven years ago a portion of a tusk was found in a gravel pit near Brilliant, Ohio, eight miles west of Bethany, W. Va., on the west bank of the Ohio River.

It is planned to continue the search in the region of the original find and make a more detailed report at a later date.

W. J. SUMPSTINE
B. R. WEIMER

BETHANY COLLEGE (W. VA.)

BORGMEIER'S REVISTA DE ENTOMOLOGIA. AN APPEAL TO ENTOMOLOGISTS

IN the field of entomology, many of us have depended for years on foreign journals, the channels for publication being wholly inadequate in this country. I notice, in my case, that in 1938 nearly half of my papers were published abroad. In the near future, some of the European periodicals will be completely closed to us, while others plan to carry on on a modest scale or even to suspend for the duration of hostilities. It seems most opportune to call the entomologists' attention to a New World publication, which, with the proper support of American workers, may well prove the ideal solution to our present difficulties. Started in 1931, the *Revista de Entomologia,* of Rio de Janeiro, is now running through the tenth volume, and has kept up an unequaled standard of excellence. Each of the nine completed volumes covers some 500 pages, adequately illustrated with text-figures and half-tone plates. The papers are cosmopolitan in authorship (being written in English, German, French, Spanish and Portuguese) and cover practically every phase of entomology, theoretical as well as practical. Each issue, of which there are now three to a yearly volume, concludes with an extremely valuable critical bibliography of neotropical entomology. This feature alone makes the *Revista* indispensable to all students of Central and South American insects. From the start, the *Revista* has been conducted as a labor of love by Father Thomaz Borgmeier, O.F.M., an entomologist of repute in his own field. As most European subscribers are likely to drop out at present, it is to be feared that the editor will run into some unexpected difficulties. All American entomologists are urged to rally to his support. Beginning next year, Father Borgmeier plans to accept for publication papers dealing with North American insects also. The editor's address is Convento S. Antonio, Largo da Carioca, Rio de Janeiro, Brazil.

J. BEQUAERT

HARVARD MEDICAL SCHOOL,
BOSTON, MASS.

SCIENTIFIC BOOKS

MEDICAL CLIMATOLOGY

Medical Climatology. By CLARENCE A. MILLS. 296 pp. Baltimore, Md.: Charles C Thomas. 1939.

MILLS'S "Medical Climatology" is symptomatic of a movement which may become a mighty tide a generation hence. For two generations or more biological investigation has centered upon the organism itself far more than upon its environment. The structure of the cell, the mechanism of inheritance, the chemical composition of glandular secretions and the influence of bacteria and other internal parasites have engrossed attention. As a result not only have the ravages of infectious diseases diminished greatly, but new and valuable varieties of domestic plants and animals have been produced in great numbers. This progress, however, has gone hand in hand with comparative neglect of the other side of the shield. Our knowledge of how the organism is influenced by the external environment represented by climate, soil and so forth is still pitifully small. The botanists, to be sure, have recently made good progress in ecology, but only the merest beginning has been made in studying the ecology of animals and man. The significance of "Medical Climatology" lies in the fact that it opens up many new lines of approach to the fruitful field of human ecology.

The thesis of the book is that two main types of disease—infectious and degenerative—display opposite relations to climate. The basic reason for this, as Mills sees it, is that human metabolism varies greatly in response to weather and climate. Warm and monotonous climates lower the rate of metabolism; thus diminishing people's power to resist all sorts of infections. Cold and variable climates increase metabolism,