result if we agree to read the superscript first and the subscript second, as suggested above.

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SUGGESTED NOMENCLATURE FOR HEAVY HYDROGEN AND ITS COMPOUNDS

THE suggestion of Professor Wood in the issue of SCIENCE for December 8 to designate heavy hydrogen atoms by the term "bar-" will not meet the complications which will arise when organic compounds of this substance are prepared. Thus 12 "bar-benzols" are possible, depending on the number of heavy hydrogen atoms in the molecule. It is almost inevitable that some special name will have to be given to the heavy hydrogen atom in order to incorporate that name in suitable form in the names of organic compounds. "Deuterium" would seem to be as good a name as any. In this laboratory we are much interested in the highly symmetrical molecule, neopentane (tetramethylmethane). "Bar-neopentane" might apply to any of 34 theoretically possible compounds. When we are successful in our attempts to make a neopentane containing one heavy hydrogen, we shall call it either "deutero-neopentane" or "neopentyl deuteride."

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LIGHTNING PROTECTION FOR TREES

ON page 507 of SCIENCE for December 1, 1933, there appears a discussion on lightning protection for trees by Professor J. B. Whitehead, which lays down four principles upon which Dr. Whitehead believes that scientists are generally agreed. Two of these principles are in such violent contradiction to the views of most present-day specialists on this subject that I think attention should be called to the matter. The two principles are stated as follows:

(1) The protective value of a lightning rod is in its ability to discharge continuously and so prevent an abnormal rise of potential gradient as related to an overhead cloud.

(3) The points of a lightning rod should be relatively sharp to permit steady leak and suppression of the high potential gradient.

Experiments upon a laboratory scale give some justification for the idea that the point discharge will prevent the building up of sufficient potential to cause a disruptive discharge. Upon the scale met with in nature, the point discharge appears utterly incapable to prevent such an upbuilding of potential, which often occurs in a very short time. Professor Whitehead recognizes that the many dozens of points on the top of the Washington Monument have been unable to prevent it from being frequently struck.

Most of those who have given considerable study to this problem recognize that the discharges from the points of lightning rods have little, if any, value in preventing a stroke of lightning, and that it is not important that the points should be sharp.

The National Fire Protection Association, the American Institute of Electrical Engineers and the National Bureau of Standards have had committees working on this problem for many years and a Code for Protection against Lightning has been produced, which has the approval of these bodies and also of the American Standards Association. The 1932 edition of this code contains the following statement:

> The sole purpose of lightning rods . . . is to protect a building in case a stroke occurs, there being no evidence or good reason for believing that any form of protection can prevent a stroke.

The first principle stated by Professor Whitehead was at one time widely held but is now thoroughly discredited.

General experience with lightning rods indicates a high degree of protection. The differing opinion as to the value of the lightning rod now exists mainly in the minds of those who have not investigated actual experience with such installations. Failure to protect is usually found to follow failure in proper installation or maintenance. A typical cause of failure is a discontinuity in the conductor which makes connection to the ground.

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BRACHYCEPHALY AND GLANDULAR BALANCE

IN delving into ethnic geography, I have been struck by the fact that certain regions which have been breeding grounds of brachycephals are also conspicuous areas of endemic goiter. Searching further, I have found indications that certain other areas, conspicuous for brachycephaly, are reported as noticeably goiterous, although not included in the common lists.

It is common knowledge, moreover, that individuals who have removed from a non-goiterous to a goiterous area are much more subject to goiter than are the natives. Whether individuals of stocks which have resided in a goiter area for only a few generations are more subject to goiter than are auchthones, is not reported; but there are some indications that this is true. If so, certain other regions, agreeing in general character with goiter areas, but into which there

has been no recent immigration, may also be suspected of being potential goiter areas.

Adaptation to environmental conditions through natural selection is sufficiently well established. There is no great difficulty in assuming, tentatively, that a stock, glandularly maladapted to a given environmental condition, may become so in from fifteen to thirty generations. The selection may operate through decrease in fertility, or through greater mortality of adolescents; neither of which would be as operative in civilized as in uncivilized modes of life.

It is not credible that the only disturbance in individuals affected by endemic goiter is thyroid. On general grounds, it is rather to be assumed that the balance, or pattern, of the system of endocrine glands is disturbed. Growth is manifestly controlled by the endocrines; and the checking of growth is similarly controlled. That the head-form is a growth-characteristic has already been indicated by Wissler. It is possible, then, that brachycephaly is a result of glandular adaptation to an environment of a certain sort. This environment may be one which is characterized by iodine deficiency: the actual nature of the condition, however, is not important for the present point.

This assumption seems to clear up some of the problems of head-form. It complicates others. Where an ancient brachycephalic population is overlaid by a later dolichocephalic one, there may be an actual continuity of the stock. On the other hand, continuation of a brachycephalic type over a long period in certain areas would indicate a series of immigrations. The possibility that the assumption is true seems to me of far-reaching importance. The different Negro types in Africa and the different American Indian types would receive an interpretation differing from the conventional one.

In the case of immigrants into a goiter area, it would be suspected that long-heads would, on the average, be more susceptible than round-heads. There would not be a sharp separation on this point, however. I do not know of any report on goiter cases which would throw light on this point. Length of ancestral residence in a goiterous or potentially goiterous area would be the point of maximal importance.

When stocks adapted to goiter regions migrate into non-goiterous areas, they might or might not be maladapted to the new condition; but in either case the iodine factor (or whatever distinguishes a non-goiter area) might cause a change in the glandular pattern, and a lengthening of the head, among other changes in growth characteristics. Apparently, this change would proceed more slowly than the converse change, although Boas' investigations indicate that it may not be very slow.

There are other directions of investigation open, if our assumption is taken seriously. For example, psychologists are well aware that the feeble-minded class includes many different types, and that those of the same Intelligence Quotient or same Mental Age vary greatly in their actual intelligences as well as in other characteristics. Glandular bases for some of these types have been suggested. It would seem useful to have more complete anthropometric studies of the feeble-minded, with particular reference to cranial indices, which, however valueless ethnically, may turn out to be useful in the differentiation of these types.

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REPORTS

THE WORK OF THE WEATHER BUREAU. II

THE two most important recommendations of this committee are: (1) That provision be made at once for extending the so-called air-mass analysis method over the United States, through the cooperation of the Weather Bureau, the Army and the Navy, as outlined below. (2) That the whole system of recording and reporting meteorological data in aid of forecasting be consolidated under the Weather Bureau (except for the activities necessary to the Army and the Navy).

(1) During the last decade there has been very rapid progress in Europe in the development and general use of air-mass analysis methods. These require a knowledge of temperatures, humidities and pressures aloft as well as on the surface, but thus far no systematic attempt has been made to obtain at a given time upper-air measurements of these aerological conditions at a considerable number of stations scattered systematically throughout the country so as to make possible the drawing of a daily upper air map of the whole country similar to the surface maps now provided by the Weather Bureau. Hence, as a first step toward the general adoption of air-mass methods of weather analysis in the United States a network of aerological stations must be established at advantageous points throughout the country. The present pilot balloon network seems adequate. The number of these aerological stations for observing the temperature, humidity and pressure aloft should be increased to twenty or twenty-five. This might readily be accomplished through the cooperation of the Army and the Navy with existing Weather Bureau aerological stations, without greatly increasing present expenditures. This is possible because of the fact that the Army and the Navy are equipped with