molecules. Otherwise, it would be difficult to explain why the bloods of all chimpanzees tested possessed both M-like and N-like antigens. This must be due to a single agglutinogen having properties intermediate between M and N. If the reactions were due to separable antigens, M and N, then all chimpanzees would have to be heterozygous for M and N, which is not possible, because such an unstable distribution would be immediately upset by a single generation of random mating.

When we consider the A-B-O blood groups, the reasoning of Fisher and his co-workers leads to an even more confusing paradox. In place of gene A_1, we would have to substitute gene complex A_1AF_A; in place of gene A_2, the complex AOF_A; in place of gene B, the gene complex $B_iB_{ii}B_{iii}B_{iv}$; and in addition, there is the fourth possibility, gene O. So, instead of a series of four simple allelic genes, Fisher's logic leads us to a series of four nonhomologous chromosome segments of varying lengths. Again it would be difficult to explain why in the course of millions of tests no evidence has ever been obtained indicating crossing-over between these hypothetical gene complexes.

As I have pointed out before (A. S. Wiener and H. Karowe. *J. Immunol.*, 1944, 49, 51), a single letter should be used to designate agglutinogens behaving like units, and separate letters should be used only for agglutinogens that segregate genetically, e.g. group AB, type MN, type Rh_1Rh_2. To use a complicated designation like CDe for the unit agglutinogen Rh_1 is just as fallacious as to substitute the name type $M_iM_{ii}M_{iii}M_{iv}$ for the simple name type M. The pertinent question must now be raised as to whether in general, if a substance has several properties or characteristics, one must postulate a separate component to account for each characteristic. A cube has 6 faces, 12 edges, 8 vertices, 24 right angles, and so on, and the number of characteristics rapidly mounts as we amplify the description. Yet the cube, considered as a whole, is a unit. It seems to me that if Fisher's arguments were acceptable and carried to their logical conclusion, it would be necessary to scrap the entire gene theory.

In conclusion I should like to mention that almost everyone who has occasion to write on the Rh-Hr blood types seems to be impelled to propose another nomenclature, so that now more than six are extant. With regard to Fisher's designations, they have the disadvantages of being based upon an incorrect theory, of being unnecessarily complicated, of using symbols like *C*, *E*, and *e*, which have no relation to Rh and which have already been used in the field of blood grouping as symbols for other agglutinogens, and of including the symbol *d* for an agglutinogen the existence of which has not been demonstrated. The other nomenclatures suggested involve the use of numbers and therefore have the same objections as the Moss and Jansky numberings for the blood groups, with the addition that more permutations and combinations are possible, so that even greater confusion would result. Previous experience in the field of blood grouping has proved that progress will be furthered only by the universal use of a single, simple nomenclature. Since the symbolic designations of the Rh factors as Rh′, Rh″, and Rh_0, and of the Hr factors as Hr′ and Hr″, have proved to be the most logical, the simplest, and the least ambiguous, they should be universally adopted, also on the basis of priority.

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Consist—A Useful Noun

The language of America's railroad men suggests for English-speaking scientists a new noun—*consist*. The *consist* of a railroad train is more than the sum of the cars involved and is not just the route those cars take. A train may carry produce from Sunburst to Sweetgrass every day, but each time it will almost certainly have a new *consist*. The word includes in the content of its meaning not only the number and kind of cars—refrigerator cars, flat cars, or pullman cars—and all the necessary railroad identification, but also the arrangement of the cars according to destination and content. The cars are arranged so that in a train leaving Chicago the cars for Minneapolis can be dropped without detaching those destined for Grand Forks. Thus, within the meaning of *consist* there is the idea of possible subgroupings.

Biologically, the chromosome is a train of genes, and the *consist* of a given chromosome would be the chain of genes with the arrangement and kind of gene peculiar to a particular chromosome of a particular individual. Thus, every man has a Y-chromosome, and every Y-chromosome has certain features which distinguish it from the X-chromosome with which it is paired in a cell; furthermore, there are differences between the Y-chromosomes of various men. The *consist* of Charles Darwin's Y-chromosome was not the same as that of Jean Baptiste Lamarck's.

In the study of induced mutations where fragmentation of chromosomes occurs, the term *consist* seems to provide new conciseness to the discussion of results, for the *consist* of a chromosome would be altered no matter whether a fragment were altogether removed and destroyed, whether it were removed and attached elsewhere, or whether it were just removed, inverted, and reattached. The conventional language of gene loci relative to other genes becomes cumbersome in any dealing with these matters.

The chromosome, because of its linearity, provides an obvious application of the new noun, but it can also be applied without loss of meaning to three-dimensional bodies. The *consist* of a sodium chloride crystal would be sodium ions and chloride ions arranged alternately at the corners of cubes, eight of which in a large cube constitute the face-centered unit crystal of sodium chloride.

H. L. Mencken, in his *The American language* (Suppl. I), quotes Philip M. Wagner (*Amer. Speech*, 1940, 15, 342), who says that the origin of *consist* as a noun probably lies buried in the history of the papers with which the engineer of a train is provided before each run. These papers describe the cars of which his train consists, their arrangement in his train, and their destination along his route. The term is indeed sometimes applied

to these papers (*Life*, 1940, 8, No. 10, 55) and also sometimes by trainmen to the bill of fare of the diner (*Amer. Speech*, 1940, 15, 342).

To this writer the word was pronounced *con-sist'* by an American trainman, exactly like the verb.

There is no change in nomenclature suggested here but, rather, an amplification of the existing language. No redefining of words is necessary; but it might be suggested that there are already established alternatives.

Matrix is not a synonym of *consist*, because that word implies a skeleton which is to be filled in. *Consist* offers a more ample description than can be attained by simply using the word *locus*, for that word has a connotation of singularity. *Lattice* seems to suggest a too-specific kind of physical structure. *Group* is too vague and is lacking in a sense of spatial order.

Con-sist', then, is suggested as a noun, defined as the significant elements of which something is constituted, together with all the relevant spatial arrangements of these elements.

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Book Reviews

Renal hypertension. **Eduardo Braun-Menéndez, Juan Carlos Fasciolo, Luis F. Leloir, Juan M. Muñoz, and Alberto C. Taquini. (Translated by Lewis Dexter.) Springfield, Ill.: Charles C. Thomas, 1946. Pp. xxx + 451. (Illustrated.) $6.75.**

When the solution of a problem as important as that of arterial hypertension has received an initial impetus by some outstanding contribution, the literature soon becomes filled with a mass of isolated, unrelated, and often conflicting observations. Gradually, as basic concepts begin to form, the various parts of the puzzle fall into place, and the gaps in knowledge become evident. In this book, a translation of *Hipertension arterial nefrogena* (Buenos Aires: Libreria y Editorial "El Ateneo," 1943), most of these observations are collected, edited, and presented in an orderly manner in an attempt to fit them to basic concepts and to demonstrate in what direction further work should proceed. Probably no other work on arterial hypertension has covered the field as well. The authors of the original work have made outstanding contributions to our knowledge of the subject, and are therefore as well qualified as any other group to write such a book. The translator, who has made a number of important contributions on the subject, has himself worked with the authors and is therefore best qualified not only to have made the translation but to have brought the English edition up to date.

The volume of material reviewed may be estimated in part by the number of references. In the original Spanish edition there were 1,104; in the English translation, 1,238. The title itself limits the material covered to the role of the kidneys in arterial hypertension, both experimental and clinical, and therefore perhaps insufficient attention is paid to the mechanism of hypertension produced experimentally by other methods, notably alterations in the nervous system and endocrine organs. However, these aspects of the problem are also well reviewed in an attempt to join them with known renal mechanisms. As a reference book for workers in the field this work is ideal. To the casual reader it might be somewhat confusing, but it gives as comprehensive a review of the subject as one can find in book form.

There are numerous illustrations, charts, and graphs, most of them taken from the authors' own works. It is fitting that the frontispiece is a drawing of Prof. B. A. Houssay, a pioneer on this problem, under whose direction and leadership much of this work was done. He writes a stimulating prologue, which is far too short.

Almost a third of the book is concerned with human arterial hypertension. This part may perhaps be criticized by those who are unwilling to accept the hypothesis that the kidneys play a predominant etiological role in human arterial hypertension. The conditions which are of most interest to medical scientists, namely, so-called "essential" hypertension and so-called "malignant" hypertension, are included under the heading, "Hypertension, Probably of Renal Origin" in the authors' classification of the syndrome, and are considered as such in the discussion on both medical and surgical treatment. This renal bias is justifiable until proof of the contrary is offered. (It is of passing interest that the word "possibly" is substituted for "probably" in the chapter heading for this aspect, in both the original and translated editions.) At any rate, the book offers strong suggestive evidence for many of the similarities between experimental renal hypertension and that type commonly found in man, *i.e.* "essential" hypertension, and as such represents a school of thought initiated by Goldblatt in 1934. The book ends with this statement: "The crucial proof of the identity of both would be the demonstration in the blood of the renal pressor substance responsible for the hypertension. This proof is still lacking. . . ."; but there is no doubt how the authors really feel on the matter.

It is hoped that the translator will continue to keep the subject up to date in subsequent editions as he has so ably done in the present one.

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