plant heights resulting from the gene action which he postulates:

nndd	1
nnDd, Nndd	1.5
NNdd, nnDD	2
NnDd	2.25

The substitution of N for n in a genotype which would otherwise produce a plant 1.5 units in height gives a genotype producing a plant either 2 or 2.25 units in height, depending on the residual genes present. Interaction of this type can not be made to disappear by transformation of scale and is non-"statistical" in the sense defined above. In this particular example it can be thought of either as complementary (inter allelic) or dominance (intra allelic) interaction. Only non-statistical interaction can ever lead to heterosis in the offspring of two equal parents with respect to the measure considered.

It is doubtful whether non-statistical interaction should be described as "mock" regardless of the measure involved even though the existence of gene interaction based on certain measures might be relatively insignificant from the standpoint of analysis of gene action or of practical application.

(3) If the action of any particular gene substitution affecting internode number or length were proportional to the total effect of all the genes present, the height of the hybrid in Richey's example would equal that of the two parents. In such case the logarithms of height, internode number and internode length would all constitute scales on the basis of which interaction is absent. Probably no other type of simply expressed gene action can result in the absence of non-statistical interaction for measurements related to each other as products, quotients and powers, as are lengths, areas, volumes and many shape indices. This constitutes a statistical reason for expecting more frequently an approximation toward independent action of gene differences when the action is expressed as logarithms of measures of these types than when expressed as the measure themselves or any other simple function of them.

EVERETT R. DEMPSTER

DIVISION OF GENETICS,
UNIVERSITY OF CALIFORNIA

A NEW GROWTH FACTOR FOR STREPTOCOCCUS LACTIS

USING as standard a sample of folic acid concentrate (7.7 per cent.) kindly supplied by Dr. R. J. Williams we compared the amount of folic acid[1] and norite eluate factor[2] in various types of extracts and liver preparations and found that some of these materials are much more active for *Streptococcus lactis R* than for *Lactobacillus casei*. In contrast an extract of spinach had the same degree of activity for both organisms.

These differences can be demonstrated to be due to the presence of another substance which we have now isolated. The new substance effectively replaces the folic acid standard in the case of *S. lactis* but is inactive for *L. casei*. We have calculated that 1γ of this product has the same potency for *S. lactis* as 56γ of the folic acid standard but that the same amount of this factor is less active than 0.0004γ of the folic acid standard for *L. casei*.

We believe that this newly isolated substance, for which we have reserved the designation of a name until its chemical nature is determined, is not folic acid or the norite eluate factor but a new growth factor.

JOHN C. KERESZTESY
EDWARD L. RICKES
JACOB L. STOKES

RESEARCH LABORATORIES,
MERCK AND COMPANY, INC.,
RAHWAY, N. J.

SULFAGUANIDINE OR SULFA-AMIDINE?

INCONSISTENCIES or inaccuracies in nomenclature are fairly common in the field of chemistry. The offense to students is perhaps not serious when such practice involves unusual cases. This does not, however, justify an attitude of indifference in the matter of accuracy whether it be in naming compounds or in the use of scientific terminology. Attention is called here to the misnaming of one of the sulfa drugs. The names and formulas of the more common and useful of these compounds are to be found in most recent editions of books on chemotherapy or biochemistry. An acquaintance with the parent compound and the modifying groups would enable any one to write the formulas of such compounds as sulfathiazole, sulfapyridine or sulfadiazine. To apply the same technique in the writing of the formula for sulfaguanidine would lead to obvious error. In the interests of accuracy this substance should be named sulfa-amidine or, for those who desire a more euphonious name, sulfamidine.

C. A. HOPPERT

DEPARTMENT OF CHEMISTRY,
MICHIGAN STATE COLLEGE

CLASS DISTINCTION AMONG AMERICAN MEN OF SCIENCE

IN several preceding editions of the Biographical Directory of American Men of Science, one thousand

[1] Folic acid was determined by means of the *Streptococcus lactis R* assay method of Mitchell, Snell and Williams. (*Jour. Am. Chem. Soc.*, 63: 2284, 1941.)

[2] Norite eluate factor assays using *Lactobacillus casei* (B. L. Hutchings, N. Bohonos and W. H. Peterson, *Jour. Biol. Chem.*, 141: 521, 1941) were made in essentially the same medium as for folic acid assays.

were differentiated from the rest by means of a star attached to their names and designated the "leading men of science." It is now proposed to continue this class distinction in a new edition of the directory.

I do not know of any useful purpose that has been served by the formation of a superior class of scientists, but I do know that it has created no end of ill feeling among those who have been excluded. Moreover, if it is useful to "star" one thousand and designate them the "leading men of science," why would it not be useful to "double star" five hundred of these as super leaders and "triple star" one hundred as super, super leaders, etc.?

It seems to me that in a democracy class distinction should everywhere be discouraged as much as possible and that there should be no fixed differentiation into classes in any group of individuals without the sanction of the group. I therefore suggest that the continuation of "starring" of scientists in the directory be put to a vote of those involved.

S. O. MAST

JOHNS HOPKINS UNIVERSITY

SCIENTIFIC BOOKS

LIGHT

Chemical Aspects of Light. By E. J. BOWEN. 191 pages. New York: Oxford University Press. January, 1943. $4.00.

THIS little book covers a wide range of subject-matter and is "intended only for the student who, whether by youth, age or other cause, is not equipped to participate freely in the mathematical struggles by which formal and quantitative solutions of problems are obtained." It is addressed therefore to those who, not equipped to make new advances themselves, "wish to know something of a branch of contemporary science." Even with mathematics at a minimum, both youth and age will find the book hard reading in places, probably by reason of the great compression of material in the text. The first chapter on waves and matter, 32 pages long, has paragraphs on linearly, circularly and elliptically polarized waves, the electromagnetic theory of Maxwell, the electronic theory of matter, interference, diffraction, resolving power of optical instruments, the electron microscope, lenses, double refraction or birefringence, fluorescence, optical activity, strains in materials, liquid crystals, streaming double refraction in colloidal systems, Tyndall light scattering, depolarization, reflection, absorption and transmission, dispersion and refraction, the photo-electric effect, Rayleigh scattering, glossy and matt surfaces, color of pigments and nephelometry. It makes a concentrated diet for any reader.

Ten chapters follow the first and expand some of the topics. Chapter 3, with 47 pages on the absorption and emission of light, is a good summary of atomic and molecular spectra. Succeeding chapters treat fluorescence, luminescence of solids, photochemical reactions, photosynthesis (perhaps the evidence from radioactive carbon should have been included in this), the photographic process (a brief, compact survey of the essentials in 8 pages), the reactions of the retina, photo-cells and chemiluminescence. There are 17 pages of appendices on light filters, photochemical technique and phosphors. There are three pages of bibliography and a Table of Constants. In this latter the value for the velocity of light in vacuo $= 2.99796 \times 10^{10}$ cm per sec, should be, according to Birge, 2.99776. If youth and age find the book difficult reading the trained chemist, not specialist in this field, can find here a trustworthy summary of the present state of the science. The format, printing, paper and binding of the book are a tribute to the Clarendon Press in the third year of total war.

HUGH S. TAYLOR

EMBRYOLOGY

The Embryological Treatises of Hieronymus Fabricius of Aquadependente. The Formation of the Egg and of the Chick (De Formatione Ovi et Pulli). The Formed Fetus (De Formato Foetu). A facsimile edition, with an introduction, a translation and a commentary. By HOWARD B. ADELMANN. Ithaca, N. Y.: Cornell University Press. xxiv + 883 pp. 46 plates. 1942. $12.50.

JEROME FABRIZIO, born at Aquadependente, was professor of anatomy at Padua from 1565 to 1613. In this chair he was the third of the distinguished successors of Andreas Vesalius. His importance as a teacher is sufficiently attested by the fact that his greatest pupil, William Harvey, not only obtained one of the most important clues for his discovery of the circulation of the blood from Fabricius's description of the valves of the veins, but also founded his lifelong studies of embryology upon those of his master.

Fabricius himself was the first since the time of Aristotle to study embryology from a comparative point of view. Through his lectures and his two books on animal development he raised embryology to the rank of an independent science. The first of these books, that on the formed fetus, appeared in 1604; the second, which deals with the embryology of the chick, was published after his death, in 1621. In spite of their importance, neither was ever translated into any modern language, and it is now more than