arrived for the extensive collection of ants for the manufacture of formic acid or of their pupae as food for song birds, and we feel sure that they could hardly have anticipated an industry which has recently sprung up both in France and Pennsylvania, and which consists of the farming of spiders for the purpose of stocking wine cellars, and thus securing an almost immediate coating of cobwebs to new wine bottles, giving them the appearance of great age. This industry is carried on in a little French village in the Department of Loire, and by an imported Frenchman named Grantaire on the Lancaster Pike, 4 miles from Philadelphia. This Frenchman raises *Epeira vulgaris* and *Nephila plumipes* in large quantities and sells them to wine merchants at the rate of $10 per hundred.

Whoever inserted this note, however, may possibly have done it with his tongue in his cheek. The hoax, as reported in *Time,* mentions a spider named Sara Bernhardt and another named Emile Zola. The above note by omitting these and other details seems to have been pitched lower for its presumably less credulous entomological readers.

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BIOLOGICAL ABSTRACTS: A CORRECTION

THE chairman of the Periodicals Committee of the American Library Association has called our attention to an error in the statement appearing in last week's SCIENCE. The New York meeting referred to had only *representatives* of various groups present, and one of the constructive proposals made was covered by the first paragraph under "Financing Agreement." It is unfortunate that the statement reads that "it was agreed," when it should have been stated that "it was proposed," etc. The committee chairman writes as follows: "That not even our committee would have the right to agree that librarians would arrange a subsidy for *Biological Abstracts* from their institutions," but that "the chairman of the American Library Association Committee on Periodicals is very eager to come out in support of *Biological Abstracts* if the principle can be established that it is the duty first of the biological organizations and biologists to support financially their own abstracting journals."

THE COMMITTEE ON ARRANGEMENTS
FOR BIOLOGICAL ABSTRACTS

QUOTATIONS

THE PILGRIM TRUST LECTURES

AN informal discussion between the officers of the society and an officer of the National Academy of Washington has led to a very happy result. It was proposed that in alternate years the society should invite and entertain a distinguished lecturer from the United States, and the academy should arrange the converse proceeding. The Pilgrim Trust was consulted on the question of providing the money required for the scheme, and most generously offered a sum of 1,500 guineas, which in the opinion of the trust should provide for suitable honoraria to be paid to the lecturers in six successive years. An exchange of communications between the academy and the society has resulted in the completion of the necessary arrangements, and the first Pilgrim Trust Lecture will, it is expected, be given in London in the coming summer.

Fellows will, I am sure, feel that no more agreeable way of emphasizing the cordial relations between American and British science could have been devised. Although modern communications are so rapid and complete and views spread so quickly, there is a personal character in the research of each man who breaks into a new field, and this interesting and important character can only be communicated by the man himself. In my opinion these lectures should not be mere summaries of past work, nor general discussions of scientific advance. It might be their special feature that they should transfer from one side of the Atlantic to the other new ideas which had already begun to be fruitful and promised wide expansion in the future. Such lectures would associate workers in a common task, and encourage correspondence and the formation of friendships. The choice of lecturers would not be determined on the same plan as the choice for the awards of medals or other distinctions, but would rather bring into prominence the most important lines of advance of the day. The progress of science would be the object of the Pilgrim Trust Lecture, and not the honoring of scientists.

The provision of funds for six years is sufficient to make trial of the plan. If it is successful, as we may be sure it will be, we hope that means for its continuance will be forthcoming.

I am tempted to further hopes. It may be that the universal wish to promote peaceful relations between the nations of the world may find some who are willing to follow the example of the Pilgrim Trust. Of all the enterprises of mankind the acquisition of Natural Knowledge pays least attention to the divisions of men. We have national industries, national trade, national literature, national art, national characteristics, even national religion, but there is only one nature for us to know. One could wish that the seasonal interchange of men to show to other nations what new illumination was dawning in this or that subject of enquiry could be firmly established and honored by the emphatic

recognition of the academies and indeed of the state itself. No greater gift could be made by one people to another than an illuminating idea; it would deserve a people's welcome.—*Sir William Bragg in his presidential address at the anniversary meeting of the Royal Society.*

SCIENTIFIC BOOKS

PROBABILITY

Scientific Inference. By HAROLD JEFFREYS. Reissue with additions. Pp. vii + 272. Cambridge, University Press, 1937. (First published in 1931.)

JEFFREYS treats probability as relating a proposition to another one which expresses the data. He postulates that the probability of p given q be equal to, greater than or less than that of r given s, and that it be maximal or minimal if p is a logical consequence or contrary of q. To these he adds two more postulates (in the Addenda). Then, by way of conventions determining the assignment of numbers to probabilities, he adopts the usual additive law and assigns 1 to logical consequence. From this basis the other usual laws are derived.

But the basis is somewhat vague. In speaking of the probability of p given q Jeffreys presupposes, not a simple relation of p to q, but a binary function; *i.e.*, a triadic relation connecting p, q and some third object figuring as value of the function. These third objects are not numbers, for Jeffreys assigns numbers later. Then what are they? Is "greater than," as applied to them, a further primitive relation? Does its transitivity demand another postulate? Possible adjustment: assume just the tetradic relation, "p is more probable given q than is r given s"; adapt Jeffreys's postulates to this, and add a transitivity postulate.

Further, an anomaly appears in the probability of p given q, where q is a contradiction. In an appendix Jeffreys argues that this probability is indeterminate, rather than 1. But this is in exception to the second postulate above, because p is a logical consequence of any contradiction q. The opposite case, where q is logically necessary, is left unconsidered; we might expect it to yield absolute probability, in some trivial sense.

Jeffreys's decision to treat probability postulationally, rather than definitionally, typifies his general program: formulation, not substantiation. He applies empirical method to empirical method, seeking to isolate a minimum of principles which *would*, if true, justify the scientist's observed behavior. The most notable result is resuscitation of the principle that the probability of a law increases with simplicity—a principle which Poincaré described as long since repudiated. Supposing all quantitative laws expressible as differential equations, Jeffreys proposes measuring their simplicity inversely by the sum of the order, the degree and the absolute values of the coefficients. Whatever other difficulties this theory may involve, one cited by Jeffreys himself is that it requires the totality of possible laws to be denumerable; but on this point his worry seems unwarranted, for the *expressible* laws are in any case denumerable—they form a progression when ordered according to increasing typographical length and lexicographically within each length.

Jeffreys presents and supports Laplace's analysis of the probability of inferences from samples to totalities; stressing, however, that the analysis applies only where we have no prior clue as to how many objects have the investigated property. Closing his statistical studies with an account of the estimation of error, he proceeds to a brief operational analysis of the physical magnitudes. Like Carnap ("Physikalische Begriffsbildung") he construes measurement as assignment of pure numbers to objects, and eliminates the magnitudes themselves, or impure quantities, as mere abbreviative idioms. Unlike Carnap, he insists on the basicness of the additive magnitudes and perceives no convention in the choice of their zero points and scale forms.

In the exposition of number which Jeffreys includes in his analysis of magnitudes, there are remarks (pp. 85, 106) which suggest an over-estimation of Whitehead and Russell's "elimination" of classes. Actually, the so-called propositional functions to which classes are "reduced" are subject like classes to the theory of types, and are indeed the same as classes, except for suspension of the extensionality principle. It is for this reason that classes are accepted as primitive in current logistic, supplanting the propositional functions.

There follows an illuminating treatment of physical geometry, which Jeffreys constructs operationally and then compares with the Euclidean prototype. Then come two useful chapters in which the fundamentals of Newtonian dynamics and relativity theory are formulated from the point of view of methodology. Remaining matters include a brief criticism of the probability theories of Venn, Keynes and others, and some sensible remarks on cause and reality.

The Addenda, appended as the distinguishing feature of this new edition, include indications of the applicability of the simplicity principle in testing the significance of added parameters; also a discussion of the simplicity principle in its rôle of substitute for the traditional postulate of determinism; also some corrections, among them the insertion of two postulates as mentioned above.

W. V. QUINE