and America, a remarkable distribution for a species of this genus.

C. DWIGHT MARSH

BUREAU OF ANIMAL INDUSTRY,
WASHINGTON, D. C.

THE USE OF A TOOL BY A SPHECID WASP

THE use of tools by sphecid wasps was first witnessed by the Peckhams and has since been reported by at least seven observers.[1] We wish to contribute one more record of this extraordinary behavior.

During the summer of 1922 we were collecting in open post oak woods near Bonham in northeastern Texas. Our attention, focused on a decaying stump, was suddenly distracted by a loud buzzing behind us. We turned to see a sphecid finishing her burrow by tamping down the filling with a pebble. The performance was not, however, being done according to Peckham. Our wasp pointed her abdomen directly upward and pounded with the tool held between her mandibles by moving her entire body up and down, thereby simulating a pile-driver rather than a hammer. As soon as she had finished we captured her. During the mêlée the pebble was lost; but it must have been about five millimeters in diameter, for the mandibles were spread to the limit while holding it. The burrow was then examined; the tamped filling was quite compact and remained intact when the surrounding soil was dug away. At the bottom of the burrow two inches below the surface there was a paralyzed caterpillar. The wasp was later determined by Mr. S. A. Rohwer as *Sphex* (=*Ammophila*) *gryphus* (Sm.).

GEORGE C. WHEELER
ESTHER HALL WHEELER

SYRACUSE UNIVERSITY

THE ADDRESSES OF AUTHORS

BECAUSE of the shortage of publication facilities, or perhaps more correctly, the increasing demand for publication facilities, there is a marked tendency at the present time toward brevity in the presentation of scientific matter in our professional journals. This is not wholly a bad tendency; in fact, many will strongly support the opposite contention, but at the same time the free exchange of ideas among scientific workers is the principal object sought in publication, and the restriction of this exchange is undoubtedly an obstacle to progress, even though it may be a necessity under present conditions. The liberal allotment of time for discussion of papers on our scientific programs is a recognition of the fact that much is to be learned from the author of a paper in addition to the material he has presented for publication.

The majority of papers published are not, however, presented before a scientific meeting but are sent direct to the editor by the author, and there is therefore no opportunity for discussion. The mails are available to fill this need, which leads me to the point I wish to make: Would it not be useful to scientific men if our professional journals were to publish in every case the addresses of their contributors along with their papers? I frequently have occasion to write to entomologists publishing in foreign journals, but am often unable to secure their addresses without first writing to the editor or to some leading foreign entomologist who may have their addresses. This is particularly true in case of the younger men who are not so well known. I am aware that addresses are often, perhaps generally, published, but my observation has been that this is done when the author has submitted it along with his paper and is not done if the author omits it. It has seemed to me that the adoption of a policy on the part of our editors of always publishing authors' addresses, or the name of the institution with which they are connected, would serve to make the desired free exchange of ideas more easily accomplished.

HARRY S. SMITH

UNIVERSITY OF CALIFORNIA

A CORRECTION

I NOTE upon page 444 of the May 16 issue of SCIENCE abstract of a paper submitted by me at the recent meeting of the National Academy of Sciences and entitled "Researches in the terephthalic acid group."

Through an unfortunate error, the name of my collaborator in this research, Dr. Philip S. Nisson, was in some way omitted in entering the item on the program of the academy, and I shall be glad to have you publish this brief note in SCIENCE calling attention to the fact.

MARSTON T. BOGERT

SCIENTIFIC BOOKS

The New Geology: A Text-book for Colleges, Normal Schools and Training Schools; and for the General Reader. By GEORGE MCCREADY PRICE. Pacific Press Publishing Association, Mountain View, California.

THIS good-looking book, embellished with excellent illustrations (of which more later), gives a first impression of actually being an orthodox and high-grade text-book of geology. A careful perusal of the work, however, leads to the conviction that the author, who is unknown to the membership list of the Geolog-

[1] See Wheeler, W. M.: "Social Life among the Insects," page 55.

ical Society of America and to the pages of Cattell's "American Men of Science," is a fundamentalist harboring a geological nightmare. In his own words, he has made his book "a travesty on the real science of geology," a science that has been built up through the labors of the geologists of the world during more than a century of observation, study and criticism. The things that have long been accepted as the fundamentals of this science—immensely long geologic time and an orderly development of organisms from single-celled individuals into the most complex community of cells as exemplified in mammals and man—are rejected by Price and in their place is substituted his "new catastrophism." This is our old friend, the "universal deluge," which Price says was brought about by a "jar or shock from the outside." All organisms were exterminated by it, including the "godless men" of the time, the only survivors being the God-fearing ones in the little ark that also harbored a loving pair of all living species of plants and animals, a million or more in number. Back of those preserved in the ark "there must have been a direct or literal creation of the originals from which the modern forms and the fossils were alike descended." The whole of the fossil worlds "lived contemporaneously," and the attempt to establish them in successive faunas led to a "paleontological whirligig [which] has been the leading diversion of people otherwise intelligent and scientific in their habits of thought."

So much for the "new" geology. I now come to a more serious matter. Before the publication of the book under review, its author wrote to Wiley and Sons, publishers of the copyrighted Pirsson-Schuchert "Text-book of Geology," asking for permission to use 32 of its illustrations. As this number was thought excessive, his request was refused, except in the case of three of the figures. Nevertheless, careful comparison of the illustrations in the two books shows that he actually appropriated 14 figures from Pirsson's "Physical Geology," and 18 from Schuchert's "Historical Geology"!

CHARLES SCHUCHERT

YALE UNIVERSITY

SPECIAL ARTICLES

THE ORIGIN OF ECTOPIC MENSTRUATING MULLERIAN TISSUE IN THE FEMALE PELVIS

A COMPLETE understanding of the origin of hemorrhagic cysts of the human ovary which contain or are lined by tissue of endometrial (Müllerian) type, is being arrived at by a steady accumulation of facts, and the substance of conclusions thus derived presents an entity of great interest to biologists in general as well as to the gynecologist and the pathologist.

Tissue of endometrial type and with the menstrual function has been observed in the human adult ovary as long ago as 1899. Such tissue until recently had been dismissed as derived either from *congenital* Müllerian rests or from the germinal epithelium through a process of metaplasia.

Sampson[1] in a series of classical studies has shown that endometrial or endosalpingeal epithelial cells cast loose at the time of menstruation or through trauma may be transported in the lumen of the oviduct to escape into the pelvis through the patent distal end of the oviduct. These cells may become implanted upon any of the pelvic structures and grow to "adenomata." And, what is of the greatest importance, all these multiple growths may be although not necessarily of the same age. Some cells attach themselves to the ovary, which becomes invaded in their proliferation, and closed spaces of Müllerian-like tissue result. Menstruation into these spaces may eventually lead to the formation of cysts which may reach fifteen centimeters in diameter. With thinning of the wall rupture may occur. When this happens there is further dissemination of epithelial seed (and possibly stroma cells) with further implantation upon many structures in the pelvis.

The writer,[2] working with rabbits seven to fourteen months old, has succeeded experimentally in producing widespread cystic growths in the pelvis by scattering promiscuously in the abdominal cavity scrapings and very finely divided bits of autologous endometrium. Some of the cysts formed come to contain blood as a result of the periodic oestrual cycles, but on account of various fundamental physiological differences between rabbit and man a well-developed hemorrhagic or "chocolate" cyst has not been attained. However, sufficient facts have been gathered by experimentation to render more secure Sampson's explanation of the genesis of ovarian hemorrhagic cysts and the frequently concomitant "adenomyomatous" reactions in the uterus, broad ligament and rectovaginal septum.

From a strictly biological point of view there is thus presented in women, most frequently between the ages of thirty and the menopause, an unique condition in which (a) normal endometrial tissue escaping through a natural opening in the oviduct into the pelvic cavity often becomes implanted on the ovaries and other pelvic structures; (b) these implants behave for a long time like normal endometrial tissue; (c) implants in the vicinity of smooth

[1] *Arch. Surg.*, 1921, iii, 245–323; *ibid.*, 1922, v, 217–280; *Boston Med. and Surg. Jour.*, 1922, clxxxvi, 445–456; *Amer. Jour. Obs. and Gyn.*, 1922, iv, 5.

[2] *Arch. Surg.*, 1922, v, 281–300; *Amer. Jour. Obs. and Gyn.*, 1923, vi, 257–262.