Mathematical Reviews can pay the compositor, printer, paper manufacturer, paper dealer, etc. Only the scholars who write the reviews get nothing. Nobody in the world would think of asking a compositor, printer, etc., to work for nothing. Only among scholars is this taken for granted. After all, why?

I have mentioned only the professions which are closest to us: medicine, chemistry, law, etc. I have not said anything about businessmen, who frequently make 6 million gulden in a single morning by making two or three telephone calls (I have a perfectly definite case in mind).

But for their poor pay the scholars have to thank not only the "world" and not only their own awkwardness, but also their colleagues. For example, Professor X invited me to take a position at the Mathematical Center at Amsterdam—for 300 gulden a month. I wrote to him that for that he could get a plumber. It is too bad that at the time I had not seen a newspaper advertisement for nurses in an insane asylum at 3,300 gulden a year with half room and board. Otherwise I would have recommended a nurse from the insane asylum to my "colleague," (even though she would have received rather less pay at the Mathematical Center). It is also too bad that I had not seen my twelve-year-old son's arithmetic problem, where ten bricklayers got 10 gulden per man per day. Otherwise I would have recommended a bricklayer to my "colleague" for the Mathematical Center. Another professor wanted me to give lectures (free, naturally). I answered him similarly.

A German professor invited me to give a lecture at his university. I did it but discovered afterwards, to my great surprise, that with childlike innocence he had never thought of an honorarium. I had to pay all the expenses of the long trip out of my own pocket. No plumber in the world would have expected as much from me as this "colleague."

A scholar in the U. S. asked me, in the name of his institution, three or four questions about a problem with which his institution expected to be seriously concerned in the next few years. Instead of answering the questions, I asked him for a guarantee of $2,000 (a lawyer would have asked much more). After that he didn't seem to need the answers.

A German professor asked me to take over a course of lectures, in one of the most difficult of all subjects, for a semester. He added that he did not have any idea of how much I would be paid, since he was "not fully informed." (Now, in that case, he should become better informed and then ask again.) What workman in the world would take on a helper without telling him his wages?

I must decline to go into the psychological reasons why the "world" pays the scholars so poorly, and why the scholars themselves are satisfied with this poor pay, and why, finally, the scholars treat each other so badly. Briefly, it comes down to this, that every intelligence is only partial; that the highest form of individuality—i.e., the highest development of the mind—is possible only in a limited domain, and that everything that lies outside this domain is judged with decreased ability. If I were not educated otherwise through years of study of the stock exchange, I should be as unworldly as the others.

"Naturally" one does not use his science for making money. (It would be terrible if a scholar did what everybody else takes for granted.) But the exploitation of the scholar is one of the worst in the world. It is the modern social problem! Nobody bothers about it, not even the scholars themselves. It would be a job for the United Nations, but they don't do anything either.

One will hardly be able to influence the scholars to look after their own material interests. Under the circumstances I can only act for myself. I don't like the rules of the game and I won't play any more. I want my work to be well paid, like that of a doctor, a chemist, or a lawyer. If the world won't do that, I shall not work any more for the "Society of Mankind." I strike. (But sometime the U. N. should take up the rate of pay of the rest of the scholars who are still working. The scholars would agree with me there.)

Sincerely yours,
E. BODEWIG

Sphagnum Moss and Egg Yolk as Food for Anuran Tadpoles

Different kinds of food have been used by various investigators to rear anuran tadpoles in the laboratory. Algae, liverworts, lettuce, or spinach, supplemented by beef liver, powdered egg yolk, or a dry pulverized mixture of whole-wheat flour and bacto-beef extract, have been tried (Rugh, R. *Experimental Embryology.* Minneapolis: Burgess Publ., 1948). When fresh liver is used, putrefaction occurs quickly. Unless the water is changed frequently and the decayed liver removed, the tadpoles will die as a result of pollution of the water. Briggs and Davidson (*J. Exp. Zool.*, **90**, 401 [1940]) found that spinach-fed tadpoles developed most rapidly but produced kidney stones. Although boiled lettuce is better food than spinach, it also decays in a short time, especially at warm room temperatures.

For the past two years, sphagnum moss[1] supplemented by egg yolk has been used by the writer to rear different species of anuran tadpoles in his laboratory. The result has been satisfactory. Under laboratory conditions metamorphosis took place about 70 days after insemination. No stones were found in the kidneys of either the tadpoles or the metamorphosed young. The sphagnum moss can be stored dry in the laboratory to be used as needed. The egg yolk is prepared by hard boiling the eggs, separating the yolk from the white, and then crushing it into small lumps and drying it. A few small lumps of egg yolk are fed at a time, as too much left in the medium will also pollute the water. In the summer, the water needs to be changed twice a week, whereas in the winter once every 5 to 7 days is sufficient.

Sphagnum moss decomposes slowly, forming acid, and the acidity of the water in turn reduces the growth of bacteria. The pH of tap water in our laboratory has been found as high as 10. If a large amount of sphagnum moss is soaked in it for a day, the pH will be low-

[1] Dry sphagnum moss can be purchased from seed stores, or from E. G. Steinhilber Co., Oshkosh, Wis., at about 50 cents per pound.

ered to about 5.4, but tadpoles will survive even at this low pH. The pH is somewhat higher if less sphagnum moss is added. Several of the tadpole cultures containing sphagnum moss in tap water have been tested, and the pH was found to vary from 6.2 to 6.9. Therefore, in using sphagnum moss as food, not only is bacterial growth reduced, but also laboratory tap water can be used without any harmful effect on the tadpoles. This method of rearing tadpoles is economical as well as time-saving.

HAN-PO TING

Department of Zoology and Entomology
The Ohio State University, Columbus

Oaths and Affidavits

Dr. Grundfest omitted from his discussion "On Political Oaths and Affidavits" in SCIENCE for July 21, 1950, the core of the problem, namely, the criminal aspects of the Communist Party. He repeatedly referred to *political* beliefs but said nothing about *criminal* beliefs. The word "Communist" carries a connotation of lawlessness that does not apply to our major political parties. For example, few professional Democrats and Republicans enter this country under false names or by means of untruthful affidavits.

I don't care about the *politics* of my doctor or my lawyer, but I do not wish either one to be a member of, or in sympathy with, a criminal organization. At the same time I see little merit in miscellaneous "oaths and affidavits." It doesn't do much good to ask a man if he is a criminal or if he associates with criminals.

P. W. MERRILL

Mount Wilson and Palomar Observatories
Pasadena, California

Basic Processes of Erosion

We who are interested in the conservation of our soil resources appreciate your article "Soil Erosion by Rainstorms," by W. D. Ellison (*Science*, **111**, 245 [1950]). The article should be quite beneficial in disseminating information on the basic processes causing erosion.

Two faulty statements were made, however, that should be corrected. These statements appear on page 246, column 2, last two paragraphs as follows: "However, these experimenters apparently did not recognize splash erosion as an important independent erosion process. The first known reports on splash erosion were made by the writer (*3*, *4*, *5*)."

Much of Mr. Laws' work on raindrops and erosion has remained unpublished, as he left Soil Conservation Service research for work more closely connected with our war efforts. As one closely associated with Mr. Laws and the work on effects of raindrops, I can definitely state that not only did Mr. Laws recognize the importance of splash erosion, but it was also recognized by the men in charge of this research (Donald A. Parsons and Howard L. Cook).

Mr. Laws not only recognized the significance of splashes but photographed the splashes and splashed soil (*Agr. Eng.* **21**, 432 [1940], Fig. 3, *B* and *C*, left, entitled: *B*. Just after striking. *C*. The air is filled with flying soil particles).

In addition, I would like to quote from the *S.C.S. Research Project Monthly Report* for May, 1941. (Note items 1*a* and 2.)

A few of the phenomena of general interest that have been observed, or that are deducible from the observations, are outlined below.

1. Raindrops impinging upon soil cause:
   (a) *Splashing* which results in large quantities of soil and water being transported from one place to another. It is easy to reason that on sloping land, the distance of travel of these splashes is greater down the slope than up; also, soil splashed into nearby rapidly flowing water becomes highly susceptible to being carried away.
   (b) *Loosening* of the soil particles at the surface, giving the run-off waters an opportunity to act upon them.
   (c) *Turbulence* in the run-off water which aids in the maintenance of the soil particles in suspension.
   (d) *Shattering* or breaking down of the soil aggregates into more easily erodible material.
   (e) *Rearranging* of the particles at the ground surface which serves to reduce the infiltration rate.
   (f) *Puddling and tamping* which tends to alter the soil structure near the surface, resulting in a thin compacted layer which further reduces the infiltration rate and thereby increases the run-off rate and rate of soil erosion. As rearranging, puddling and tamping progress, the erodibility of the surface decreases.
   (g) *Leveling*, or localized erosion and deposition, which reduces depression storage and results in greater amounts of run-off and soil loss. Leveling is a result of several of the primary actions.

2. Because of splashes, a large part of the run-off occurring from each small area of bare soil consists of water and soil transported to that area by means of splashes from the adjacent areas. Consequently, the soil and water losses by run-off from any small area of bare soil are less if the area is bounded by areas from which splashing does not occur. It was observed that a large part of soil and water losses from a 2-foot square plot of soil subjected to an erosive rain took place through the medium of splashes rather than through the medium of run-off. This phenomenon is implicity involved in the balk method of farming.

3. In some of the tests the soil surface was covered for brief periods with a roof that shielded the soil from direct hits by the raindrops, but drained their water gently onto the soil. Under this condition, overland flow was occurring without rainfall impact effects. When the roof was removed, the same magnitude of flow existed but with disturbances caused by the striking raindrops. A run-off rate of 3 inches per hour was observed to produce no erosion when the roof protected the soil surface. When the roof was suddenly removed, the soil concentration jumped to 2 percent by weight of the run-off.

4. Experiments of this type have wide application because they show individual processes, uncomplicated by external factors. Thus, one practical value of the above experiment is to demonstrate the essential function of soil covers. It is evident that any cover, whether it be metal, stone, vegetation or plant residues, that protects the soil surface from rainfall impact, will reduce soil losses materially.

5. Depending upon plot conditions, the results also show that there is a certain rate of overland flow below which erosion will not occur from the action of run-off alone. Although in these experiments the bed material was an agricultural soil and the depths of flow were only a few hundreths of an inch, this result should not be surprising, since many experimenters concerned with the movement of bed load in open channels have determind that for any