Further application of this method to other steroids and cardiac aglycones is in progress.

References and Notes

1. We wish to thank Robert Gaunt of Ciba Pharmaceutical Co. for the supply of aldosterone and E. B. Hershberg and Eugene P. Oliveto of Schering Corp. for the supplies of all the other steroids used in this study.
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Communications

On the Legitimacy of Scientific Authorship

A recent communication [J. Wilson, *Science* 120, 276 (1954)] inveighs against competitive publication. While one agrees wholeheartedly that "the accent must be on the desire to pass along what has been discovered," the extreme form of argument invites certain criticisms.

1) Does employment or promotion really depend on the *number* of publications? Such a claim appears to be a gratuitous attack upon the discrimination of scientists responsible for personnel selection in universities and research institutions. Surely quality is usually considered the most useful criterion of ability. And a paper under one name will be given the greatest weight as evidence of individual worth.

2) Some people are said to put down what everyone knows, and because no one has written it up they get the credit. One may doubt that unpublished studies can be generally known. But, granting failure of the original investigator to publish, it might be argued that he who makes the work public performs a service useful to science. If a man is paid to carry on research (as are most of us now), his duty should be to make the results known, or allow others to do so.

3) Remarks about material that has no business in print seem to imply a widespread failure of editorial function, and perhaps a trace of intellectual snobbery. A young scientist may rely on expert and impartial editorial criticism to develop his standards. Moreover, strictures on third-rate papers have been known to serve as excuse for publishing nothing. Who waits to produce a classic may wait forever, while the second or even fifth-rate scientist makes many useful contributions in his humbler sphere.

4) By omitting names from articles, a helpful guide to quality and reliability is lost.

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29 November 1954.

Eville Gorham's communication came to us originally as a letter expressing private views; but at our instance, he agreed to put it into a form suitable for publication.

"Whether scientists like it or not, the competitive spirit is now being applied to science no less than to business or industry" writes John Wilson [*Science* 120, 276 (1954)]. Wilson deplores also the printing of one's name as author of a paper when most of the meat of that article did not originate with the author and asks if there is, among scientists, a mad scramble to get their names in print.

On staffs of institutions where research is the sole or principal function, there may be the scramble that Wilson mentions but it seems to me that he is, in a large measure, incorrect when he frames his picture, as he does, to include scientists in universities. Those individuals have the dual responsibility of teaching and research.

In a university, assistant professors, who prove to be capable teachers although ineffective in research and publication, find out, to quote Wilson, that "either we get papers out or get out." These teachers will probably find their niches in colleges because many colleges make teaching alone the principal responsibility of professors.

Other assistant professors who prove to be highly effective in research and productive in published writing, but ineffective in teaching, also will have to get out and probably will find their niches in organizations with research as their principal function.

There is also the assistant professor who proves to be effective in both teaching and research. Furthermore, the results of his research are worthy of publication and therefore are published. He probably will find his niche in a university and in time will earn promotions up to and including the rank of professor. If so, he repeatedly will have expounded information that mostly is not the result of his own researches. He will have done this in three ways: (i) verbally in lectures, (ii) by demonstrations in the laboratory, and (iii) by publication of articles aimed to inform the elders and parents of his students. He signs his name to articles as a scrivener rather than as a discoverer. The elders pay his salary, in part, for his interpreting science for them. They read his material when few or none would do so if it were anonymous. In fine, the professor publishes results of his research and also interpretations of research.

The university professors that I know "do the best they can" and seem to be unworried by the competi-

tive spirit that admittedly exists. Be there other professors who are worried by such a spirit, probably even they are more useful than they would be in the absence of such a spirit.

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6 December 1954

More on "A New University"

The proposal of William Seifriz [*Science* 120, 87 (1954)] for "a new university" that would be "a center . . . from which will emanate a culture that man will respect, an intelligent biological system of ethics," will strike a responsive chord in many who feel that the well-rounded man, scientist no less than nonscientist, is the man best equipped to make the greatest contribution toward a sane, orderly and wholesome society.

I wonder whether it is generally known that there already exists in this country an organization—not on so elaborate a scale as a university, but one nevertheless that is well founded, stable, and rapidly growing—which has as its primary objective the effectuation of substantially the same ideals as those the university proposed by Seifriz would advocate.

I refer to the American Humanist Association, with headquarters at Yellow Springs, Ohio. This is a membership organization, which is open to all interested in its program of promoting Humanism—a way of life, or philosophy, firmly based on the findings of science, imbued with the democratic outlook, and cultivating a rational system of ethics, all combining to forecast a culture truly worthy of the respect of mankind. Some call Humanism a religion—not however in the sense of indicating a belief in a deity, for Humanism finds no reliable evidence of a deity in the cosmos, but rather as indicating a personal commitment to the highest ideals human insight has yet evolved.

Humanism emphasizes the dignity inherent in every human being. It teaches that man, within the limitations of his natural environment, has the capability of solving his problems, not only material, but moral; that, just as man has outgrown a supernatural basis for his interpretation of natural phenomena, so also has he outgrown a supernatural basis for his ethics and must develop his ethical concepts on a naturalistic foundation; and that, because this is the only life it seems likely he will live, he ought to make the best of it for himself and for others.

Whether or not the American Humanist Association will evolve into the university that Seifriz envisions, only time will tell. But it offers here and now an opportunity for all interested to participate in and to advance the general program that such a university would foster.

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Hydrolyzed Fish Protein from the Flesh of Waste Fish

During the last few years there has been a fight going on throughout the world against protein malnutrition, which is more serious than vitamin and mineral deficiencies, since protein is essential to the body for its growth, repair, and nutrition and is needed by children and adults alike. The existence of life without protein is not possible. In almost every country today the supply of protein is not adequate, and, as a result, cases of malnutrition are increasing day by day, leading to higher and higher death rates. It is time that attempts were made to correct this deficiency by supplying protein from some untapped resource that is also inexpensive.

Fish is a well-known source of protein, but as yet no attempt has been made to extract cheap protein from the flesh of tons of waste fish that is neither properly utilized nor consumed by human beings. For example, the flesh of sharks and rays is not properly utilized in many places in India because it is not considered palatable. However, we have found that the protein content in these fish is as high as in other edible fish. Our preliminary work has been done on sharks and rays.

The first step in our procedure is to mince thoroughly the flesh of the fish and then to wash it. When this has been done, the fish is boiled from ½ to 1 hr with very dilute acetic acid solution under 80°C until the muscle becomes threadlike when pressed. Then the fish is washed thoroughly to remove the acid and lipids. When the overflow water runs clear, the washing is completed, and the water is pressed out. This substance is completely dried and treated with petroleum ether to eliminate the fat and to increase the keeping quality. This last step is repeated several times.

The resulting complex fat-free protein is insoluble in water and is nondiffusible and difficult to absorb. Therefore, hydrolyzation is necessary to make this protein easily assimilable. Since there is the possibility of destroying some of the amino acid end-products by acid hydrolysis, we used alkali hydrolysis by caustic soda, 10 to 12 percent caustic soda under 80°C. This method is simple to use and is suitable for both laboratory and commercial purposes. When the substance becomes completely liquefied, it is neutralized by commercial acetic acid (85 percent). This neutralized liquid is spray-dried to a flourlike powder that is cream colored and retains its natural flavor. The yield of the finished product is nearly 10 percent of the raw material. The fat-dissolved petroleum ether is distilled to remove pure ether. More than 50 percent can be recovered.

The finished product has an 85-percent protein content, which is much higher than that contained in other foods, both foreign and local. For example, raw or boiled eggs have 11.9-percent protein content; dried eggs, 43.4 percent; cheese, 36.8 percent; roasted chicken, 29.6 percent; frozen raw beef, 20.3 percent;