dirty cover, and that was the one with the 70-pound cover of the three mailed to Evanston, Illinois.

In spite of the information presented, the question might still be raised why the Association does not mail its journal in wrappers. The estimate of the cost of printing and mailing *Science* in 1949, exclusive of editorial costs, accounting, and addressograph supplies and labor, is $175,000 for an average of 35,000 copies per issue. The present mailing exceeds 32,000 copies per issue.

The average cost for printing and mailing *Science* in 1949 will be, according to forecasts, 9.6 cents per copy, or $5.00 per year. Only $1.50 of a member's dues of $6.50 remains available for all the other expenses of the Association, an amount that would be quite insufficient if it were not for advertising in both *Science* and *The Scientific Monthly*. *The Scientific Monthly* has a circulation of nearly 20,000, or more than *Science* had four years ago. Since the readers of the two journals do not differ appreciably in scientific standing or scientific interests and fewer than 1 in 20 subscribe for both journals, *Science* and *The Scientific Monthly* are equally good advertising media in proportion to their circulations.

F. R. MOULTON

Australian Sod Fly Introduced Into California (Diptera: Stratiomyidae)

In response to a request for the identification of some peculiar flies collected by the writer at San Francisco, California, Dr. Maurice T. James, associate professor of entomology at The State College of Washington and authority on the Stratiomyidae, communicated the following very interesting information which may prove to be of considerable economic importance. Dr. James writes: "The fly collected at San Francisco is *Metoponia rubriceps* Macq., a common species in Australia, where it breeds in sod. I have never before seen it from the New World. Apparently, the larvae were brought in in soil and have become established in the San Francisco area. The immature forms are well known. For a good description of them and their biology I can refer you to the following paper, 'Irwin-Smith, Vera. 1920. Proc. Linn. Soc. New South Wales.' "

These insects were discovered in San Francisco by the writer on September 21, 1948, crawling about on a lawn bordering Park Presidio Boulevard adjacent to Golden Gate Park. Only three specimens were taken at that time, two of them being females. Two additional females were captured a few days later by Dr. Edward S. Ross, curator of insects in the California Academy of Sciences. These he found flying low over lawns in Golden Gate Park. During the same week Mr. Kenneth Innes, a student at the University of San Francisco, found a female fouled in wet paint at his home, not far from the Park.

Attempts to find more of the flies failed until the morning of October 7, when the writer discovered them in abundance on the campus of the University of San Francisco, several blocks distant from where the first flies had been found. The morning was sunny and sultry. The males were very active, most of them either flying a few inches above the lawn or crowding vantage points on dandelion stems. They were so numerous that a single stroke of the net captured a dozen or more specimens. The females, by contrast, were seen to take wing only occasionally and then only for flights of a few feet. While several sweeps of the net yielded a total of some 100 males, only three females were captured with them. Most of the females merely crawled about on the lawn until they were besieged by the males. A number of mated pairs were observed in the grass. For several days thereafter flies of this same species were found on the same lawn but never in the same abundance. None was observed after October 19.

Irwin-Smith (*loc. cit.*) states that in Australia this species has two broods per year, one appearing in the spring and the other in the autumn. However, she found larvae of varying sizes occurring at all periods of the year and noted that the larval period requires several months, perhaps a year or more. Moreover, she observed the larvae feeding on grass roots and concluded: "It is evident that their main, if not only, source of nourishment is in the juices of the living plant." While these flies appear to do no serious damage to the lawns which they infest in Australia, in America they should be regarded with suspicion as insect immigrants with important economic potentialities. Consequently, they should be watched carefully in this new environment, where they are away from their natural enemies.

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If This Be Treason—

Never advise a man to go to war or to marry. So runs a proverb at least two centuries old, which I have no intention of transgressing. It may, however, be high time to raise this question: Have not we oldsters gone too far in advocating total abstinence?

For the third time in 30 years I am listening to the arguments against drafting for military service young scientists or young men who have made a gesture toward science. By this time I have heard them all. Never yet have I heard one that did not seem to apply equally to young carpenters, electricians, or plumbers. Worse still, the proponents of these mass exemptions seem to have overlooked what may be very important facts. These young men with an interest in science are human beings. Many of them are also American citizens.

Lately our psychologists have done many interesting things. They have not yet, however, given us even a preliminary report on the present morale and professional efficiency of the men who took their chances in uniform, either by enlistment or draft, as compared with mentally comparable men who sought and secured draft exemption through their importance to any one of a dozen "war essential" projects. Special study might well be given also to the mental condition of the young men who were

held out of uniform against their own wishes. Obviously, once in the war, our chief business is to win. But surely, if a war is really worth winning, some consideration may well be given to the future of the men who win the war or for whom it is won.

There is, too, a wholly different angle that might be studied. That is the question as to whether those active in science are the best judges of the need for their activities and the desirability of the exemption of their potential assistants. Long and intimate association with my scientific colleagues leaves me with the conviction that they measure up well in patriotism with any other group of citizens. That certainly does not mean, however, that they are unprejudiced or that they are good judges of the importance of their own work.

In his farewell address to the Medical School of Harvard University on November 28, 1882, Oliver Wendell Holmes repeated this story:

> When the city was besieged each artisan who was called upon in council to suggest the best means of defence recommended the articles he dealt in: the carpenter, wood; the blacksmith, iron; the mason, brick; until it became a puzzle to know which to adopt. Then the shoemaker said, "Hang your walls with new boots" and gave good reasons why these should be the best of all possible defences.

It could hardly be otherwise. Does it surprise anyone that during war many a man finds in his own specialty great national importance and great need of Federal support? To him it *is* the most important thing that can be done. No doubt it is the most important thing *he* can do. But that is not the question here asked. That question is quite different. Is the contribution these young men may make of such probable value to the Nation that we are justified in compelling or even urging them to separate themselves from the great mass of their fellows and to form a special class? There is another less pleasant possibility. If a mere gesture toward science, mere registration for advanced work in science, means draft exemption, the results may be injurious to science itself. We offer the blatant temptation for men of weak character and morale to select science as safety first. Weak departments will fill their laboratories with weaker students and produce the Ph.D.s who will be the professors of the next generation. All this at a time when science is already too far from humanity for the national good!

In botany at least, the only field with which I can claim familiarity, we need to begin to think of our science not as an end in itself, but as a part of human living. We need more botanists with the courage to say with Kenneth V. Thimann, of Harvard University, "The consequences of major progress in this area are very great, not only to pure science but for agriculture. In these days when so much of the world is near to starvation no worker can fail to carry this thought in the back of his mind, in spite of the frequent statement that research is its own reward and that no further incentive is necessary" (from the Foreword of *Vernalization and photoperiodism:* a symposium, by A. E. Murneek, *et al.* Waltham, Mass.: Chronica Botanica, 1948).

We need to read something other than what is printed in our own memoranda and in *Science*. It might not do any harm to read even the statements of S. L. A. Marshall, one of the editors of the *Detroit News*, who was formerly on Gen. Eisenhower's staff in the European Theater of Operations, where he directed the Historical Branch of the Army. Speaking at Washington and Jefferson College on April 16, 1948, he said:

> Sitting at the central seat as I did, in the position uniquely suited to give one the main chance for clear evaluation of the forces, material and moral, which made possible our victory, and determined the balance for defeat or for triumph on each of our battlefields, I came through that experience seeing clearly for the first time that the epitome of national greatness, and the strength which makes for the survival of a society, are not to be found in the wealth and productive genius of its industry, or the brilliance of its scientific achievement. No indeed! Real national strength and the power to endure and to be made strong again through adversity, do not come of the material triumphs of civilization, but of what the total of surrounding influences puts into the hearts and souls of men.

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Quantitative Estimation of Amino Acids on Paper Chromatograms

The excellent technique for the separation of amino acids and other substances by one- and two-dimensional paper chromatography was introduced by Consden, *et al.* (*Biochem. J.*, 1944, **36**, 224). It has the drawback that, as originally described, it is only a qualitative method or, at most, an approximately quantitative method. A. S. Keston, *et al.* (*J. Amer. chem. Soc.*, 1947, **69**, 3151), A. J. Woiwood (*Nature, Lond.*, 1948, **161**, 169), L. Naftalin (*Nature, Lond.*, 1948, **161**, 763), and others have been able to determine the amino acids or radioactive amino acid derivatives separated by paper chromatography. They cut strips or areas from the paper, extracted the amino acid or its derivative, and determined its concentration in the extract by standard methods. These procedures suffer from the disadvantage that they either require specialized equipment or are relatively tedious to carry out. R. B. Fisher, D. S. Parsons, and G. A. Morrison (*Nature, Lond.*, 1948, **161**, 764) have described several methods based on the observation that the area on the paper occupied by the amino acid or other substance is a function of its concentration. This method has been only moderately successful in our hands and could be applied only when there was no overlapping of the amino acids.

The following procedure has, however, given good results. The amino acids in a protein hydrolysate are divided into three groups: dicarboxylic amino acids by adsorption on an anion exchange resin, basic amino acids by adsorption on a "carboxylic" cation exchange resin, and neutral amino acids. After elution from the resins (where necessary) and concentration, 0.01-ml aliquots containing less than 0.1 mg of amino acids are chromatographed. The amino acids are then revealed by spraying with ninhydrin or other suitable reagents. The color