society showing what had been attempted and accomplished during the preceding year. The local and contributing societies were appreciative of such publications and reprints as could be supplied from time to time, but there was no regular publication, a fact which interfered with the payment of contributions for the work. In spite of difficulties, it has been demonstrated that it is clearly possible to make the local scientific bodies into an effective force. What appears to be needed is some means of keeping them in contact with the central committee.

In spite of the fact that the majority of members are interested, the Ecological Society of America has not yet developed sufficient interest to put this or any other plan on a permanent workable basis. At the end of the twenty-five-year period, the project is probably no better established than at the end of the first nine years, when the machinery was first put to work in the case of the Glacier Bay National Monument. With the wartime and post-war pressure to destroy nature already mounting, it is well for those interested in its preservation for scientific purposes to look over the machinery by which some of it may possibly be saved.

V. E. SHELFORD

UNIVERSITY OF ILLINOIS

ON METHODS OF "STARRING" AMERICAN MEN OF SCIENCE

THE recent discussions in SCIENCE regarding the practice of "starring" deserving men of American science seem to have missed the crux of the problem. The question of the usefulness or fairness of such a practice depends entirely upon the accuracy of the method by which the desired end is attained. If it gives predominating chances of selection to certain scientists with the exclusion of others equally worthy of consideration a serious injustice is done and the value of the practice of "starring" is correspondingly decreased. That the present method of "starring" affords a very unfavorable opportunity of selection for many deserving men can be very easily proved.

Forty-two research institutions are represented on a recent list of 82 chemists, nominated for inclusion among the 175 leading chemists of America, from which list 44 are to be selected for "starring" in the seventh edition of the Biographical Directory of American Men of Science. These institutions, with the number of nominees belonging to each, are indicated in the accompanying list.

A few questions that every thoughtful recipient of this list might ask are: (1) What plan of nominations was adopted that gave Massachusetts Institute of Technology 8 times as many nominees for starring as the California Institute of Technology or any of the other 24 institutions having only 1 nominee? Is this proportion based upon number or productivity of research staff? (2) How does it happen that Yale, Johns Hopkins, Mellon Institute of Industrial Research and scores of other important chemical research institutions are not represented? (3) Has chemical research fallen so low in the institutions not mentioned on this list that they have no candidates worthy of being starred? Such a conclusion is too unreasonable to be considered. (4) Has general interest in the practice of starring men of science become so slight that many directors of research are indifferent about it and do not take the trouble to sponsor candidates? This is perhaps one explanation for the very unbalanced list of "starrable" chemists now being submitted.

Massachusetts Institute of Technology	8	Brooklyn Polytech.	1
Illinois	7	Rockefeller Inst.	1
Wisconsin	5	Cal. Inst. Tech.	1
Pa. State Col.	4	Monsanto Chem. Co.	1
California	4	Conn. Agr. Expt. Sta.	1
Columbia	4	Gen. Aniline Co.	1
Michigan	3	U. S. Dept. Agr.	1
Northwestern	3	New Eng. Ind. Research Foundation	1
Chicago	3	Shell Develop. Co.	1
Stanford	2	Missouri	1
Minnesota	2	Rohm and Haas Co.	1
Princeton	2	Bell Tel. Labs.	1
Ohio State	2	Ethyl Gas Corp.	1
Merck and Co.	2	Brown	1
Nat. Bur. Standards	2	Calco Chem. Co.	1
Pennsylvania	2	Cornell	1
Harvard	2	Harvard Med.	1
Pittsburgh	1	Esso Labs.	1
Purdue	1	U. S. Rubber Co.	1
Distill. Products	1	Nebraska	1
Eastman Kodak	1		—
U. S. Bur. Mines	1		82

Whether the situation as regards chemistry exists also in the lists of nominees for other sciences the writer has no means of knowing. If the same conditions prevail generally then the present system of selecting "stars" for inclusion in the Directory of American Men of Science is of little value and might just as well be discontinued.

There is nothing so fallible as human judgment and if the practice of starring men of science is to be continued it should be based upon purely impersonal methods of selection which are free from the faults of indifference, favoritism, etc., that give rise to unfair representation. Impersonal methods are in fact the only means of enabling a voter to make a selection from a long list of candidates of whom the majority are unknown to him. Among such impersonal criteria may be mentioned numbers of papers published in a given period of years, numbers of patents taken out, rank of position, offices held in scientific societies, honors awarded, etc. Each one of these methods has

certain limitations, yet when considered together on a rating sheet the combined weighted average is as accurate as can be achieved by statistical methods of evaluation, and it is vastly superior to the result obtained by the common method of marking a long ballot upon the basis of personal acquaintance or of solicitation.

The author has compiled lists of selected chemists for his personal use from the decennial author indexes of *Chemical Abstracts*. If for this ten-year period a chemist shows a productivity, as author or coauthor, of over 20 papers, his name is added to a preliminary list to which other criteria are then applied. A preliminary list thus compiled includes deserving names that are not included on the list of chemists submitted by the editor of the new Directory of American Men of Science. It is open to the objection that an index of papers includes many items of trivial scientific importance, but it has its use as a rough rapid sorting-out method which can be combined with the results of other criteria, according to the purpose of the compilation.

Because of the frequency with which the Directory of American Men of Science is consulted and of the high regard in which it is held, it is most desirable that its method of "starring," in order to avoid the injustice of overlooking worthy candidates, be based upon impersonal methods of the highest attainable accuracy.

C. A. BROWNE

U. S. DEPARTMENT OF AGRICULTURE

CLAVACIN AND THE PRESS

RECENTLY a press article appeared in many newspapers concerning the work done in this laboratory on clavacin, an antibiotic substance obtained by *Aspergillus clavatus*. The release given to the local press was so worded as to emphasize the fact that this material was being tested against *plant pathogenic bacteria*, and full credit was given Dr. S. A. Waksman, of the New Jersey Agricultural Experiment Station, and his associates for their discovery and pioneer work on clavacin. It was compared with penicillin, and the statement was made that clavacin was more bactericidal for *some species of bacteria* than was penicillin. Due to the wide publicity given penicillin, this statement attracted the attention of the outside press, and unfortunately resulted in decidedly misleading statements regarding the possibility of clavacin as a powerful new remedy for human diseases. Furthermore, some of the abbreviated articles made no mention of the previous work of Dr. Waksman and his associates.

The work done in this laboratory has been concerned primarily with the testing of clavacin-containing filtrates on bacterial plant pathogens. This research was undertaken as a result of the publication by Waksman, Horning and Spencer (SCIENCE, 96: 202–203, 1942) indicating that *Aspergillus clavatus* produced a bactericidal substance which was effective against both gram-positive and gram-negative organisms and, furthermore, its action was bactericidal as well as bacteriostatic. Since most species of bacteria causing plant diseases are gram-negative we reasoned that clavacin might be more useful in the control of plant pathogens than any of the many other mycogenous bactericides which had been described.

Dr. Waksman kindly furnished me a strain of *Aspergillus clavatus* which he had found to be very active in the production of the bactericidal substance. Using the media and the technic he suggested, we were able to obtain a material which gave similar results to those obtained by Dr. Waksman when tested against *Staphylococcus aureus*, the test organism used by most investigators. Using the unconcentrated, sterile filtrate, a series of tests were run against over twenty species of phytopathogenic bacteria. The detailed results and methods used will be published in full at a later date. In general, bacteriostatic action was observed in all cases at fairly low concentrations, while bactericidal action varied greatly. A comparison of *Staphylococcus aureus* with *Phytomonas pruni* indicated that the latter could be used as a standard organism for plant pathogens, since the lethal dose was about the same for these two organisms.

Comparisons of penicillin and clavacin were made on some of the plant pathogens, in each case using the unconcentrated filtrate from *Penicillium notatum* and *Aspergillus clavatus*. The *Penicillium notatum* culture was one known to produce a high yield of penicillin and the filtrate was standardized with *Staphylococcus aureus* as the test organism. The *Penicillium notatum* filtrate failed to show any decided bactericidal action against a number of the phytopathogenic species, whereas the Aspergillus filtrate showed its usual potency.

It is to be regretted that this comparison of clavacin and penicillin, when reported in the press, resulted in a flood of letters from people suffering from all kinds of diseases, whose hopes had been raised by the results obtained from penicillin and the wide publicity given this new "miracle drug." Dr. Waksman has stated that clavacin is quite toxic to animals and, certainly in its present form, is not likely to be a rival of penicillin or the sulfa drugs. It should be recalled, however, that penicillin was reported as "toxic" when injected into animal tissues before it was highly purified.

H. W. ANDERSON

DEPARTMENT OF HORTICULTURE,
UNIVERSITY OF ILLINOIS