on the amylolytic action, in concentrations ranging from 0.01 to 0.0001 *M* (covering approximately the range of concentrations used by the previous authors): tryptophane, proline, nicotinic acid, β-indole acetic acid, β-indole propionic acid,[2] α-naphthalene acetic acid,[3] and 1–4 dichlorophenoxyacetic acid.[4]

None of these compounds has shown the slightest inhibiting power under the above-mentioned conditions. It is therefore certain that human amylase is not inhibited by the indole derivatives and other plant hormones that have been mentioned.

ED. H. FISCHER
J. FELLIG

Department of Organic Chemistry
University of Geneva

References

1. TURNER, N. C., and CRANE, E. *J. Dental Research,* **23**, 413 (1944).
2. TURNER, N. C., and CROWELL, G. E. *Ibid.,* **26**, 99 (1947).
3. VOLKER, J. F., and MURRAY, D. P. *Tufts Dental Outlook,* **21**, (2), 3 (1947).
4. VOLKER, J. F. *Science,* **112**, 61 (1950).
5. FISCHER, ED. H., and BERNFELD, P. *Helv. Chim. Acta,* **31**, 1831 (1948).
6. MEYER, K. H., *et al. Ibid.,* 2158.
7. FISCHER, ED. H., DUCKERT, F., and BERNFELD, P. *Ibid.,* **32**, 1060 (1950).
8. NOELTING, G., and BERNFELD, P. *Ibid.,* **31**, 286 (1948).
9. SUMNER, J. B. *J. Biol. Chem.,* **62**, 287 (1925); **65**, 393 (1925).
10. BERNFELD, P., and FULD, M. *Helv. Chim. Acta,* **31**, 1420 (1948).

[2] All the preceding substances are pure biochemicals from Hoffmann-La Roche Inc., Basel.
[3] Prepared in our department.
[4] From American Chemical Paint Co., Ambler, Pa.

Isolation of Ascorbic Acid and Rhamnosides from Sea Water

THE presence in sea water of a substance that is physiologically active in oysters and that can be measured photometrically with *n*-ethyl carbazole has been reported by Collier, Ray, and Magnitzky (*1*). Comparison of the *n*-ethyl carbazole absorption spectrum formed in sea water with spectra of pure carbohydrates led to the conclusion that more than one carbohydrate was taking part in the determination. Methods to isolate and identify the compounds were then sought.

The carbohydrates were removed from sea water onto a column of activated charcoal, as described by Whistler and Durso (*2*). They were then removed from the column by elution with ethanol. Evaporation of the eluate gave two white crystalline compounds, which were separated by their different solubilities in 50% ethanol. The substance that precipitates in 50% ethanol, as yet unidentified, gives some indication of being a rhamnoside.

Evaporation of the alcohol-water mixture produced a crystalline compound which, in water solution, gave an ultraviolet absorption spectrum similar to that reported for dehydroascorbic acid by Herbert, Hirst, Percival, Reynolds, and Smith (*3*).

In order to study the similarity between the absorption spectra more closely, we prepared a solution of dehydroascorbic acid by oxidizing ascorbic acid in the presence of Cu ++. The absorption spectrum of this oxidation product agreed very closely with that of our compound from sea water, both in water and in 79% H_2SO_4. The colors resulting from the reaction of the oxidized ascorbic acid and from our sample with 2,4-dinitrophenyldydrazine exhibited the same spectra. The amount of sample available was too small to allow any extensive recrystallization and, therefore, any comparison of melting points with those reported in the literature was not feasible.

Absorption spectra from samples of sea water taken in various parts of the Gulf of Mexico agreed closely with the spectra we had run on oxidized ascorbic acid. We concluded from these curves that the vitamin is present in the sea largely in the form of dehydroascorbic acid. The amounts of vitamin as shown by the absorption spectra did not agree with the calculated amounts of carbohydrate found by the *n*-ethyl carbazole method. The discrepancy is probably due to the as yet unidentified "rhamnoside," which shows some color with *n*-ethyl carbazole. This "rhamnoside" is by far the most abundant carbohydrate in sea water. We have found concentrations as high as 0.1 g/l of the "rhamnoside" from inshore waters.

PETER J. WANGERSKY

Gulf Fishery Investigations
U. S. Fish and Wildlife Service
Fort Crockett, Galveston, Texas

References

1. COLLIER, A., RAY, S., and MAGNITZKY, W. *Science,* **111**, 151 (1950).
2. WHISTLER, R. L., and DURSO, D. F. *J. Am. Chem. Soc.,* **72**, 677 (1950).
3. HERBERT, R. W., *et al. J. Chem. Soc.,* 1270 (1933).

Experts' Biases about the Older Worker[1]

IN OUR industrial economy, which is characterized by rapid technological change, increasing mechanization, and increasing specialization, youth and speed are at a premium. The overemphasis on youth is accompanied by a corresponding underestimation of age, with the result that individuals are fearful about aging. This value system has given rise to complaints and erroneous beliefs about the abilities, skills, and personality structure of the older worker.

During the past year the attitudes of several groups toward the older worker were investigated. The groups differed in age, educational background, and socioeconomic status, and they included undergraduate students, graduate students, middle-aged nonprofessional workers and their wives, and retired men and women living in the community and in homes for the aged. Attitudes were measured by their agreement or disagreement with a questionnaire of 51 statements about the older worker. Some of the statements covered physical decline; others covered mental decline; still

[1] Retirement and Adjustment Series: Number 9. Sponsored cooperatively by the Institute of Adult Education and the Institute of Psychological Research, Teachers College, Columbia University.

others were concerned with resistance to new ideas and procedures, reaction to criticism, attitude toward retirement, attitudes toward the younger worker, etc. All the statements were oriented in terms of disability. Those dealing with physical changes with age have a basis in fact, since there is no doubt that certain changes do occur with age, such as the loss of visual and auditory acuity, reduction of strength and endurance, and retardation of reaction time. Beyond the age of 45 there is a reduction in physical reserve, and there may also be a narrowing range of adaptation. However, the known facts about aging indicate that the physical changes are gradual and vary widely among individuals. Moreover, some of the losses in physiological capacity may be compensated for by the use of glasses or hearing aids, or by modification of work tasks. Apart from the items dealing with physical changes, most of the statements in the questionnaire are not supported by any experimental evidence. They are beliefs, misconceptions, and stereotypes about the job performance of the older worker.

The responses of the groups listed above indicate a negative attitude toward the older worker. Both young and old subscribe substantially to erroneous notions, although graduate students do not accept the beliefs as readily as the other groups studied.

Recently a national meeting was called to discuss problems of the older worker and his retirement. The participants, who included representatives of management, labor, government, medicine, social work, and universities, were individuals with a great deal of experience and interest in the problems of the older worker. The questionnaire described above was given to them in order to determine to what extent a highly selected group of this kind would agree with the beliefs about the older worker. Only 35 of the 75 participants filled out the questionnaire, despite the fact that the president of the conference had explained its purpose and had asked for full cooperation. The average age of the group was 46 years, with a range from 30 to 70 years.

The results, which should be interpreted with considerable caution because of the small number of cases, indicate that the respondents subscribed to fewer misconceptions about the older worker than do any of the groups referred to above. However, more than 30% exceeded the mean number of stereotypes subscribed to by graduate students. More than 80% of the respondents agreed that older workers take longer in getting over illness; 65–75% agreed that they take longer in getting over injuries, are more interested in security than job advancement, look to the past, and need more time to learn new operations; 50% agreed that older workers resist new ways of doing things. On the other hand, none of the respondents subscribed to the beliefs that older workers fail in emergencies, make many errors, are interested only in putting in their hours, spoil much of their work, and quit jobs frequently.

There were wide and interesting differences among the various groups represented at the conference. The number of beliefs subscribed to by those representing the universities, government, and labor was considerably below the mean for the total group, whereas the number accepted by those representing management, medicine, and social work was considerably above the mean. For the labor representatives, a higher proportion agreed that older workers need longer and more frequent rest periods. For the social workers, a higher proportion believe that they take jobs away from younger workers, are unsure of themselves, increase production costs, are unable to smooth out disagreements, cannot concentrate, are critical of younger workers, need more time to learn new operations, are not physically able to keep up with the work, resist new ways of doing things, look to the past, and are suspicious of other workers. For the physicians, a higher proportion think that older workers are slow, fail to keep up with changing methods of work, have a high rate of absenteeism, lose jobs often, get all the breaks, take credit for the work done by younger men, have difficulty in planning their work, are paid too much for the work they do, increase costs of pensions for employers, are slow to catch new ideas, are mentally unable to keep up with the job, are difficult to work with, and cannot listen to other people's complaints without getting irritated. For management, a higher proportion agreed that older workers cannot win the confidence and loyalty of fellow-workers, are in a rut, show poor judgment, have no ambition, cannot supervise others well, get occupational diseases more often, are more interested in security than job advancement, will not carry out plans assigned by supervisors, and keep younger men from getting ahead.

Within the obvious limitations of the data, the replies to this questionnaire suggest that individuals generalize about the older worker in terms of their own experience and orientation. The representatives from universities, government, and labor, who, in their daily work, look for and are impressed with the positive rather than the negative aspects of aging, subscribe less to the stereotyped opinions than the management, social work, and medical groups, which tend to see the negative rather than the positive aspects of aging. The labor representatives, whose orientation is in terms of job security and job protection, see the older worker as one in need of such protection. The social workers, who work with individuals who have adjustment problems, see him as one who is insecure, rigid, deteriorated, and difficult to get along with. The representatives of management, who are concerned with production, see the older worker as one who has no ambition, and who presents difficulties in supervision. The physician, whose orientation is in terms of pathology, views him as an individual who is slow, rigid, and unproductive.

Individuals who are experts in aspects of the aging process appear to have projected their specialized experiences into their responses to the statements in the questionnaire. But it is the bias of experience with substrata of the total aging population that gives rise

to various points of view, which are not incorrect for the substrata but lead to genuine misconceptions for the class as a whole. For instance, although two thirds of the aged are physically able to take care of themselves socially and economically, and are able to function psychologically, physicians may popularize quite a different view as a consequence of their examination of the other third.

The meager data from this study suggest the need for orienting experts about potential biases from their own experiences. There is need for a campaign to change the attitudes of the public toward the older worker. Such an educational campaign should stress the normality of the physical and psychological changes that come with age, and that should not be confused with deterioration. In view of the fact that the number of older workers in the labor force, already large, will continue to increase in the future, a change in attitudes toward the older worker is necessary if they are not to become a severe drain on the economy because of discrimination in employment. The experts seem to be in especial need of orientation.

JACOB TUCKMAN
IRVING LORGE

Teachers College, Columbia University

Book Reviews

London Essays in Geography. Rodwell Jones Memorial Volume. L. Dudley Stamp and S. W. Wooldridge, Eds. Cambridge, Mass.: Harvard Univ. Press, 1951. (Published for the London School of Economics and Political Science.) 351 pp. $5.00.

The 17 essays comprising this memorial volume were prepared by colleagues and former students of Professor Jones. The authors received most of their training and developed their specialized interests in the King's College and London School of Economics joint School of Geography which Rodwell Jones, in cooperation with W. T. Gordon, of King's College, was largely responsible for organizing in 1921–22. It was due to his patience, wisdom, and experience that the new venture was able to surmount the difficulties encountered in the first few years of operation. The school developed a broad coordinated approach to geography—economic, historical, and physical—designed to meet the specialized needs and capabilities of the two colleges, to build a sound academic treatment of the subject, and to put it upon a firm academic foundation.

The essays cover various aspects of geography. All are well written, in language that should present no difficulties to the understanding layman. Some, like Kenneth Hare's "Climatic Classifications," are technical and functional in approach, designed for the specialist. Others, such as Beaver's "Development of the Northamptonshire Iron Industry, 1851–1930," or Gordon's "Severn Waterway in the Eighteenth and Nineteenth Centuries," which effectively integrate physical, economic, and historical data, are excellent examples of historical geography and closely resemble the Rodwell Jones approach to the subject. Dudley Stamp's "Applied Geography" does a superb job of demonstrating in a practical fashion the role of geography in land-use planning. One could wish that the volume contained more essays of this type covering economic, political, and social problems. In his approach Stamp clearly demonstrates "the application of geographic principles and methods to the problems of town and country, the actual methods employed by the geographer in attacking his problem," and the basic goals the study should achieve.

Geographers the world over will find the essays stimulating and helpful. Their variety will satisfy needs of both specialists and generalists. To social scientists they present a clear picture of how geographical factors can contribute to the solution or interpretation of many types of problems.

As a memorial to "a loved and respected friend and teacher" the volume is somewhat disappointing. Too little emphasis is given to "the man"—the man who contributed so much to the development of geography in the University of London and, particularly, to the joint efforts of the London School of Economics and King's College.

Rodwell Jones was not a prolific writer, but what he did publish is characterized by a very high standard of scholarship. It is unfortunate that the editors did not see fit to include a bibliography of his essays as well as of his books, a reprint of his stimulating inaugural address made in October 1925 when he succeeded H. J. MacKinder as head of the Department of Geography in the London School of Economics and professor of geography in the University of London, and a portrait. These personal aspects, appropriately highlighted, would have sharpened the picture of the man from whom many students drew inspiration and guidance.

JOHN B. APPLETON

Office of Intelligence Research
Department of State

Advanced Engineering Mathematics. C. R. Wylie, Jr. New York–London: McGraw-Hill, 1951. 640 pp. $7.50.

The increasing extent to which modern engineering technology has availed itself of mathematical tools beyond the calculus is well illustrated by the content of this book. Technically, the material divides into two parts, although the presentation itself is con-