MOTTLED ENAMEL IN RAT MOLARS

IN an experiment planned to learn the conditions for producing mottled enamel in rat molars, we have fed members of unreduced litters of albino rats, born and suckled on a sucrose-casein type of ration, graded daily doses of fluorine as sodium fluoride by pipette. The amounts given were 0, 1, 2, 4, 8, 16, 32 . . . micrograms each, respectively, to as high as 256 micrograms to a single rat, the tenth in its litter. The rats were weaned at 21 days and fluoride feeding was discontinued. The animals were then placed on a ration of yellow corn meal 66, whole milk powder 30, alfalfa powder 3 and sodium chloride 1, for eight weeks and sacrificed.

The first and second molars of both the maxillae and mandible of the rat which had 256 micrograms of fluoride showed dull white, deeply corroded enamel. Particularly the cusps of the upper molars appeared denuded of enamel. The third molars appeared normal. Two rats which received 128 micrograms of fluorine daily showed a diffuse milkiness of the enamel at the gingival line of the first two molars and some rounding of cusp edges. Other rats, 34 in all, receiving less than 128 micrograms of fluorine, had apparently normal molars.

The high dosage of fluorine required to produce mottled molars is more evidence that the rat is less sensitive to fluorosis than man.

The successful production of mottled enamel in the permanent teeth of an animal in which dental caries can also be induced permits direct experimentation of the interrelations of these two diseases. It also provides a means of study of the time relations of the formation of normal and mottled enamels.

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QUOTATIONS

THE NEED FOR EXTENSION OF MEMBERSHIP OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE[1]

IN 1931, the centenary year of the British Association, the General Treasurer's Report stated that the activities and liabilities of the association had increased to such an extent that further endowment would be essential in order to consolidate the position which it had attained at the close of its first century.

During the past few years the British Association has not hesitated to extend in fresh directions its activities for the advancement of science.

A new Division for the Social and International Relations of Science was established in 1938. It is charged with coordinating work that deals with these relations both at home and abroad, and with carrying out inquiries and research; and it is empowered to hold meetings not only during the annual meeting of the association, but also independently. The division is in full activity: its organization necessarily involves expenditure; and the fields of inquiry already opened to view indicate that with more ample resources the association will be able to undertake, through the division, new work of national and international importance.

As from October, 1939, the association will cease to publish its report in an annual volume, which is felt to be no longer the most effective medium of publication. Instead, a quarterly periodical will be issued under the title of *The Advancement of Science*. It is confidently expected that this new quarterly will assure a more adequate record of the transactions of the association and engender a wider interest in them; but in order to give full effect to this expectation the association must be in a position to restrict itself less severely than hitherto in the matter of printing costs.

In 1937–38 the association broke new ground by sending a representative scientific delegation to India to join the Indian Science Congress Association in celebrating the jubilee of that body. The practice of organizing such delegations to overseas territories, especially those in which normal meetings of the association could not be expected to take place, is regarded as an imperial service of first importance, and one which the association is peculiarly qualified to render. Proposals for more than one such delegation overseas are under consideration now. But in order to further the extension of this principle, it is obviously desirable that the association should be able to bear out of its own funds a larger share of the cost of delegations than is possible at present.

A happy development of international contacts has recently been inaugurated by the establishing of more intimate relations between the British and the American Associations for the Advancement of Science. It has been agreed that in alternate years the British Association shall invite an American lecturer, and the American Association a British lecturer, to their respective annual meetings. Grants will be made to cover the expenses of the lecturers.

Increased financial resources are essential if the asso-

[1] An appeal signed by P. G. H. Boswell, General Treasurer of the Association, Burlington House, London.

ciation is to take fuller advantage of its opportunities in the directions indicated above, as well as in various other ways. For instance, the practice, adopted in recent years, of offering exhibitions to young students nominated by universities and colleges, enabling them to attend meetings of the association without cost to themselves, is obviously capable and worthy of extension. The presence of distinguished scientific visitors from overseas has always been encouraged at the annual meetings: in present world-conditions it is less easy than formerly for such persons to come at their own expense, and the association is without funds to assist them. The possession of Charles Darwin's house, Down House, in Kent, which is maintained as a national memorial open to the public, offers opportunities which could be realized if the association had means to supplement the endowment which accompanied Sir Buckston Browne's gift of this property.

These wider potentialities in the association's sphere of work have all emerged in recent years; but there must also be borne in mind the field of scientific research and inquiry in which the association has honorably labored almost since its foundation. The ability to make grants for research is of the essence of its being, and to maintain and strengthen this activity is one of the first tasks of every successive general treasurer.

At each of the last seven annual meetings (1932–38) the attendance of members has exceeded 2,000, the average number being 2,375. That average had not been attained in any similar period previously. Here, then, is evidence of growing interest in the work of the association. But of those who attend the annual meetings (apart from life members), only a small proportion—about one quarter—are regular annual subscribers. The remainder subscribe only for the year of any particular meeting which they attend. I need hardly emphasize the difficulties that arise in attempting to budget on a membership income which fluctuates annually as widely as that of the association. The financial position of the association will be greatly strengthened by a substantial increase in the numbers both of regular yearly subscribers and of life members; and this appeal is issued in the hope that such an increase may be achieved. It is addressed to all who appreciate the benefits which science confers, and would wish to aid the association in discharging its function of the advancement of science.

SCIENTIFIC BOOKS

POPULARIZATION OF MODERN SCIENCE

The Wisdom of the Body. By WALTER B. CANNON, George Higginson professor of physiology in the Harvard Medical School. Revised and enlarged edition. 333 pp., with 40 illustrations. W. W. Norton and Company, New York, 1939. $3.50.

The Science of Health and Disease: A Text-book of Physiology and Hygiene. By HOWARD W. HAGGARD, director of the laboratory of applied physiology of Yale University. Revised edition. xiii + 594 pp. with 10 plates and 89 figures and 16 tables. Harper and Brothers, New York, 1938.

The Stuff We're Made of. By W. O. KERMACK, research laboratory, Royal College of Physicians, Edinburgh, and P. EGGLETON, lecturer in biochemistry, The University, Edinburgh. viii + 342 pp. with 8 plates and 55 figures. Longmans, Green and Company, New York, 1938. $3.20.

You're the Doctor. By VICTOR HEISER. 300 pp. W. W. Norton and Company, New York, 1939. $2.50.

Health, Hygiene and Hooey. By W. W. BAUER. 322 pp. The Bobbs-Merrill Company, Indianapolis, 1938.

A CHARACTERISTIC feature of scientific endeavor during the past decade has been the earnest effort on the part of reputable scientists to popularize current scientific ideas and to promote public appreciation of how science may profitably be applied in everyone's daily life. Naturally this effort concentrates along biological lines with special attention to individual and public health. The publication of Paul de Kruif's "Microbe Hunters" in 1926 set an example which a host of followers have tried to imitate.

Some of the current efforts to popularize new scientific ideas are included in the books reviewed here. These range in style from the dignified and often technical presentation of Professor Cannon to the smart fast-moving wisecracks of Dr. Bauer.

Professor Cannon's volume brings up to date his 1932 exposition of the same title. It also adds a new chapter on the effects of age on homeostatic mechanisms. For the coordinated physiological processes which maintain the complex steady states in the organism peculiar to living beings, involving, as they may, all organs and parts working cooperatively, Professor Cannon suggests the special designation, *homeostasis.* He introduced this term in order to differentiate these steady physiological states, characteristic of living things, from the relatively simple physico-chemical states in closed systems where forces are balanced and where the constant condition may be termed equilibrium. In this volume Professor Cannon considers "first, what may be regarded as the fundamental condition of stability, then the various physiological arrangements which serve to restore the normal state