

and the littoral, sublittoral, profundal and abyssal benthos.

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FOOD OF MUD-DWELLERS

IN reply to Dr. Robert T. Morris's request for an adjective to define food derived from the top layer of mud, I submit *acropelotic* (ἄκρος, top; πηλός, mud).

AGNES DE SALES

COLLEGE OF MT. ST. JOSEPH-ON-THE-OHIO

AN interesting point in ecology is raised by Dr. R.

T. Morris in SCIENCE (84: 291, 1936) regarding a technical term descriptive of the nature of the food of mud-dwelling organisms. It may be suggested that while the food-stuff is of detrital origin, the food supply considered as their source of energy might be characterized as ilyodynamic.

Since the above was written, an excellent choice of terms has been submitted by Professor Glover M. Allen (SCIENCE, 84: 374). The word now introduced, though partly redundant, may perhaps be allowed to stand for final selection.

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE CANCER SYMPOSIUM OF THE MEDICAL SCIENCES SECTION

THE Section on Medical Sciences of the American Association for the Advancement of Science has arranged for the Christmas meetings a symposium on cancer consisting of a series of seven sessions to be held from Tuesday to Friday, December 29 to January 1, inclusive. The first session, which will be held on Tuesday morning, will be devoted to questions concerning radiation, while the afternoon session will be devoted to various aspects of the relationship of hereditary and constitutional factors to the occurrence of tumorous growth. The two sessions on Wednesday will be concerned with the induction, stimulation and inhibition of tumors. This will involve a consideration of the carcinogenic substances, the relationship of the sex hormones and the significance of viruses and of inhibitory substances to the etiology and development of tumors. On Thursday morning tissue culture work in connection with cancer will be discussed and the metabolism of cancerous tissue will be considered. In addition to these sessions, there will be two general lectures, one on Thursday afternoon and one on Friday, which will take up certain more general aspects of the cancer problem. The section is anxious to make this as worth while a symposium as possible and has brought together the leaders in the various fields. In so doing it hopes that it will call attention to the fundamental work that is going on in this country in the investigation of this serious problem and will afford an opportunity for an authoritative survey of the actual status of this field.

The session on radiation will be opened by Dr. Tuve, of the Terrestrial Magnetism Laboratory, Carnegie Institution, who will review for the group the artificial sources of high energy radiations and their applications from a purely physics standpoint. This will

be followed by papers by Dr. Lauriston S. Taylor, of the United States Bureau of Standards, who will compare the methods of determining the quality of x-rays, and Dr. G. Failla, of Memorial Hospital, New York City, who will discuss some biophysical aspects of radiation therapy. A comparison of the effects of x-ray and neutrons on normal and neoplastic tissue will then be made by Dr. John H. Lawrence, of Yale University. The effect of alpha particles and their relationship to the effect of neutrons will next be discussed by Dr. Raymond E. Zirkle, of the University of Pennsylvania. Dr. Stafford L. Warren, of the University of Rochester, will then present his work on the combined effects of roentgen-radiation and fever upon malignant tissues. The session will be brought to a close by Dr. Robley Evans, of the Massachusetts Institute of Technology, who will report on the recent progress in the study of radium poisoning. It might be mentioned that the Medical Sciences Section has cooperated with the American Physics Society and the Section on Physics in the arrangement of the days for their respective symposia. The latter organizations are planning a series of papers on radiation on Monday, taking up the more physical aspects of radiation, while the Medical Sciences Section in its radiation session will take up mainly the biological aspects of radiation, except for the orientation paper by Dr. Tuve, which in a sense will form some continuity between the two programs. The combined program should present a very thorough survey of the newer developments in the field of radiation.

The session in the afternoon will present a series of papers on a variety of aspects of heredity and constitutional factors in their relation to tumorous growths. Such considerations as the respective rôles of heredity and somatic mutation in the etiology of

tumors induced by parasites and chemical irritants, the factors of heredity, age and acquired hypersensitivity in relation to cancer, the relation between the histology of spontaneous mouse tumors and the genetic constitution of the animals in which they arise, and the genetics of mouse leukemia and various other papers of similar nature will be presented.

The session on induction, stimulation and inhibition of tumorous growth will devote considerable time to the discussion of compounds. As is well known, tremendous activity has been exhibited in this field of late, and this symposium will afford an opportunity of presenting a number of views on this question. The session will be opened by Dr. Louis F. Fieser, of Harvard University, who will discuss the chemical aspects of the carcinogenic substances and the indications which can be drawn from the chemical structures regarding the relationship between carcinogenic action and the sex hormones. This paper will be followed by others on various phases of carcinogenic substances and a number of papers on the relationship of the sex hormones to the cancer problem. At this session will also be given papers on the significance of viruses and of inhibiting substances in connection with tumors.

Thursday morning will be devoted to the consideration of questions closely related to the metabolism of cancerous tissue. The session will be inaugurated by Dr. Warren H. Lewis, Carnegie Institution, who will discuss the cultivation and cytology of cancer cells. This will be followed by a critical analysis by Dr. Dean Burk, of the United States Department of Agriculture, of our present knowledge of the intermediary carbohydrate metabolism of tumors and the significance of the Pasteur-Meyerhof reaction in the light of recent work. The relationship of protein metabolism to malignant growth will be discussed by Dr. Carl Voegtlin, National Institute of Health, while the rôle of the amino acids and the nucleic acid derivatives in developmental growth and their possible significance

to the cancer problem will be presented by Dr. Frederick S. Hammett, of the Research Institute of Lankenau Hospital. The session on metabolism will be closed by a discussion of the distribution of inorganic salts in cells and tissues with particular reference to such studies of cancerous cells by the microincineration technique.

The two general papers will be given by Dr. C. C. Little, of the Roscoe B. Jackson Memorial Laboratory, and Dr. Walter Schiller, of the University of Vienna. Dr. Little will present a general lecture for not only Section N but for the entire association at 4:30 on Thursday and his subject will be on the social significance of cancer. Dr. Schiller will lecture at 4:30 on Friday afternoon on changes and modifications in the conception of carcinoma. It may also be mentioned that the American Society for the Control of Cancer has been invited by the association to hold an exhibit on various aspects of the social control of cancer.

In addition to the cancer symposium the Medical Sciences Section is planning to hold a joint session with the pharmacy subsection on Monday afternoon and the general session for the presentation of general papers will be held on Friday morning.

The association has been invited to hold the last day of the meetings on Saturday, January 2, at Philadelphia. Accordingly, the Medical Sciences Section plans to hold one session on Saturday morning at 10:30 at the Philosophical Society in Philadelphia and has invited Dr. Wendell Stanley, of the Rockefeller Institute, Princeton, N. J., to give a lecture regarding the interesting and important work that he has been doing on the tobacco mosaic virus which he has succeeded in crystallizing. The afternoon will be devoted to visiting the various medical scientific laboratories in Philadelphia.

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SPECIAL ARTICLES

NITRIFICATION IN PRESENCE OF ORGANIC MATTER

It is well known that, when cultured in artificial media, the nitrifying organisms, *Nitrosomonas* and *Nitrobacter*, are paralyzed even by very minute quantities of organic matter. On the other hand, nitrification in nature, especially in soil and sewage, proceeds in presence of fairly large quantities of organic matter. This incompatibility of behavior of the classical nitrifying organisms in pure artificial cultures and in their natural environments may be explained as due to one or more of the following:

- (1) The nitrifying bacteria function in association with the saprophytes of the soil.¹
- (2) There are in soil several strains of organisms other than the classical nitrifiers which could tolerate fairly large quantities of organic matter and nitrify ammonia.²
- (3) All nitrifiers are heterotrophic at some stage of their lives.³

¹ W. Omeliansky, *Centralb. für Bakt. Abt.*, 2, 5, 473, 1899.

² D. W. Cutler and B. K. Mukerji, *Proc. Roy. Soc.*, B 108, 334, 1931.

³ N. W. Barritt, *Annals Appl. Biol.*, 20: 165, 1933.