mining the effect which spices have on micro-organisms. Here the spice or condiment is mixed with the agar and poured on one side of the plate, plain agar on the other and streaks of the organism in use made across both. A modification in the method of preparation has been adopted which obviates the necessity of using rods or metal strips. This consists of cutting semi-discs of muslin (cheesecloth) which are sterilized in the petri dishes. Plain agar is poured over the entire dish and then when the agar is hard the piece of cloth with adherent agar is taken out from each petri dish with sterile forceps and into its place is poured the agar containing the condiment to be tested. The cloth semi-discs are more easily prepared than the rods and the union between the agar in the two halves of the plate is more direct. This, we take it, is an advantage since it readily permits of diffusion. The agar clinging to the cloths need not be wasted but may be saved by throwing the cloths into a funnel and allowing the agar, when liquefied, to drain off into a flask. Instead of plain nutrient agar, potato or wort agar, gelatine or other liquefiable solid media favorable to the growth of organisms to be studied, may be used.

The accompanying figures illustrate the method of use and the character of the results obtained.

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SOCIETIES AND ACADEMIES

ST. LOUIS ACADEMY OF SCIENCE

At a meeting of the St. Louis Academy of Science on March 20, 1916, Dr. A. R. Davis, of the Missouri Botanical Garden, presented a paper on "Enzyme Action in Marine Algæ," of which the following is an abstract:

During the years 1914–15 a general survey was made of the enzymes of certain representative marine algæ. The work was carried on for the most part at the Woods Hole Biological Laboratory since fresh, vigorously growing plants were obtainable in that immediate vicinity. Plants were also collected and carefully dried and with this material the work was further prosecuted at the Missouri Botanical Garden. All investigations where dried tissue was involved, however, were later duplicated with fresh material at Woods Hole. The standard methods of enzyme isolation and determination were employed and where negative results were obtained many modifications of these methods were brought to bear. In summarizing the results obtained, two striking points stand out, *i. e.*, the relative paucity of the number of enzymes demonstrable by standard methods, and the extraordinary slowness with which most of these enzymes act. Especially were both these points true for the "browns." In *Ascophyllum* and *Fucus* of this group catalase was the only enzyme demonstrable, while in *Laminaria* and *Mesoglœa* diastase, lipase, proteinases and catalase were found. Enzyme action was much more easily shown in the "reds" and the "greens" where in addition to the ferments found above, dextrinase, tryptase, ereptase and nuclease could be demonstrated. Oxidase was shown in but two forms, *Agardhiella* and *Ulva*. The rate of action in these two groups was also much faster than it was in the "browns," although here too, such action was slow when compared with that of many of the higher plants.

The carbohydrases found were those acting upon such polysaccharides as starch, glycogen, dextrin and laminarin—in no case any of the disaccharides employed being attacked. This latter fact is especially interesting in the light of the rôle maltose plays in the assimilation of the higher carbohydrates. Lipases and nucleases were quite widely distributed, and proteinases (tryptic and ereptic) were demonstrated in most of the forms investigated. Casein and peptone in neutral and slightly alkaline solution proved the most favorable substrates for these latter enzymes, although albumin and legumin were also hydrolyzed in certain instances. There was no digestion of algal protein, as shown by autolytic experiments, and no splitting of amino acids.

Several factors may enter in to account for the limited number of enzymes formed and the slowness of their action: (1) they may be formed in small amounts in the tissues, or as formed may be inherently slow; (2) inhibiting substances may be liberated upon crushing the cell which may cut down the rate of action or destroy it altogether. Evidence is at hand tending to show that both of these factors may be concerned.

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