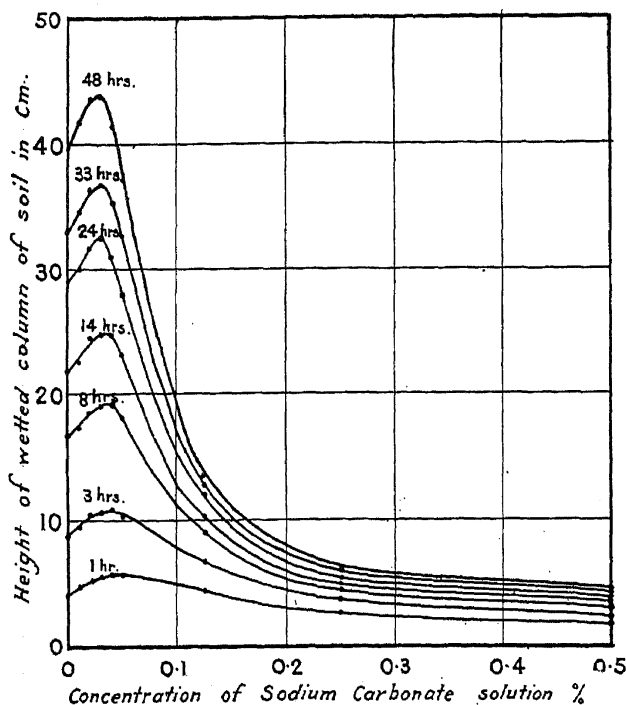


highest concentration which it was necessary to use in the experiments. We may describe here the results of the experiment using sodium carbonate. The figure shows the variation of the length (in cm.) of the soil



column visibly wetted by the solution, as a result of capillary ascent, with the concentration of the solution. Each curve in the figure refers to a particular time interval after the commencement of the experiment. It is very interesting to note that, as the concentration is increased from 0 per cent. (water) to about 0.03 per cent., there is an increase in the upward movement and that the well-known impermeability of the soil in the presence of sodium carbonate begins only when the concentration is increased beyond the above optimum value. The permeability of the soil decreases very rapidly as the concentration increases from 0.03 per cent. to 0.1 per cent., the decrease with further increase of concentration being less conspicuous. At a concentration of 1.0 per cent. the solution hardly shows any upward movement through the soil even after the lapse of several weeks. It may be remarked that the increase in the upward movement with traces of sodium carbonate is probably due to the slight constriction of the capillaries between soil particles due to incipi-

ent swelling of their colloidal coatings and the consequent increase in the upward pull. Further swelling causes choking of the capillary pores and consequent impermeability. Very similar results have been obtained with oxalic acid, sodium oxalate, lithium carbonate and the experiments are being continued with other salts.

L. A. RAMDAS.

A. K. MALLIK.

U. P. PANDIT.

Agricultural Meteorology Section,  
Meteorological Office,  
Poona,  
June 10, 1942.

#### FUNGUS DISEASE OF GOURAMI (*OSPHROMENUS GORAMY LACEPEDE*)\* IN A POND AT MADRAS

A POND in the Government House Gardens, Guindy (Madras), was stocked with 30 gourami fingerlings (*Osphromenus goramy*) ranging in size from 3"-7" on 2nd April 1940, along with 100 Pearl-spot (*Eetroplus suratensis*). In August 1941 the tank shrank to  $\frac{1}{5}$ th of its size, the depth of the water went down to 3' 7" at the deepest part and the water was thick and muddy. A trial netting was made and 4 gourami, 10"-11" long (2 males and 2 females), 13 pearl-spot, 2½"-5½" long and 1 climbing-Perch (*Anabas scandens*) were caught. Of the 4 specimens of gourami, 3 exhibited red patches on their sides.

On 17-9-1941 three hauls brought twenty-six gourami, one climbing-perch and one pond-tortoise: the latter two being predaceous, were removed. The sizes of the 26 fish ranged from 7"-12", the average being 9½" in length. All of them had fungus patches and were treated with 3 per cent. salt solution for a minute and released. As the attack of the fish by the fungus was common and persisting, it was found necessary to repeat the treatment.

\* With the kind permission of the Director of Industries and Commerce, Madras.

On 1-10-1941 a specimen of gourami, measuring 7½" in length, was taken to the laboratory for observation and treatment, as the fishes in the pond still had the attack. There were three reddish patches on the left side of the body, two in the middle and one one inch from the eye, dorsally and five patches on the right side, one at the base of the pectoral fin, two in the middle and two at the base of the caudal fin. The right eye was injured, bulging, opaque and dark brown in colour and the left eye, though not injured, was dark brown in colour. On examination, the red patches on the body showed the presence of *Saprolegina* sp., a fungus which commonly attacks freshwater fish. This fish was kept in an aquarium in clear water after giving a saline bath. The water was changed twice a day and the fish fed regularly with leaves of water-lilies, vallisneria, boiled rice, and oil-cake. The reddish patches of fungus turned pale; the eyes became normal; the pale white colour of the fish changed to brown with a rosy hue. The fungus patches disappeared in about a week. The fungus though not harmful by itself, enables pernicious bacteria and other parasites to get a hold on the surface of the skin which destroy the tissues and cause great havoc to fish-life.

This fungus attack may be attributed to (1) overcrowding of the pond with fish, (2) pollution caused by decaying organic matter, (3) injuries caused in a limited area by enemies, such as the pond-tortoise and climbing-perch and (4) lipoid-disease caused by malnutrition. The above factors were noticed in the present case, except the lipoid-disease for which no examination was made. The pond in April 1941 had shrunk to 1/5th of the original size, rendering the water area less roomy for the fish. The water was muddy and all the weeds, water-lilies, etc., had shrivelled up in the hot weather, thus depriving the fish of their chief food.

As it was also suspected that the disease might be due to some chemical factor, both samples of water—one of the pond in Guindy and the other in which the fish was kept for

observation—were analysed,† for chlorine content, hydrogen-ion concentration and oxygen content, etc. The former differed from the latter in having a low alkalinity to methyl orange (2.4 per 100,000 as against 9.5 of the other), low pH (7.1 per 100,000 as against 7.6), a slightly higher oxygen content (0.171 per 100,000 to 0.158) and a less amount of chlorine (0.7 per 100,000 as against 4.6). In spite of the lesser percentage of oxygen and the higher amount of chlorine, the disease has been cured in the clear water in which the fish was under observation.

Mud in suspension chokes the gills of fish and renders respiration difficult with the result that the general conditions and health of the fish suffer deterioration. Besides, overcrowding caused by reduced environmental area is generally responsible for loss of health and condition of fish. The presence of enemies like the pond-tortoise and the climbing-perch had caused abrasions and loss of scales and injury to the fish in this instance. Such injured spots on the fish form the foci for the attack and spread of fungus diseases. The spread of the disease must have also been accelerated by the high temperature of the season and want of sufficient food.

K. CHIDAMBARAM.

Madras Fisheries Service,

April 3, 1942.

† The water samples were analysed at the King Institute, Guindy, Madras.

<sup>1</sup> Davis, H. S., "Care and Diseases of Trout", *U. S. Bureau of Fish, Inv. Rept.*, 1937, No. 35.

<sup>2</sup> Malik, G. M., *Bom. Nat. Hist. Soc.*, 1939, 41, No. 2.

<sup>3</sup> Mather, F., Plehn, M., *Praktikum Der. Fishkrankheiten*, 1909.

#### THE MANUFACTURE OF GLANDULAR PRODUCTS IN INDIA

THE note on the above subject by Prof. B. B. Dey<sup>1</sup> and its subsequent rejoinder by Dr. B. Mukerji<sup>2</sup> seem to be of considerable interest at this particular juncture. True it is that many things can be produced in India from the Indian raw materials; but in most discussions, symposia or in writings only one side of