DISCUSSION

STEM GALLS OF SUGAR-CANE INDUCED WITH INSECT EXTRACTS

STEM galls of sugar-cane have been produced, for the first time, by artificial inoculations (with insect extracts) and evidence is presented indicating that the stimulus to gall formation is chemical in nature.

In 1936 adults of the green leafhopper, *Draculacephala mollipes,* were collected from cane plants and macerated in a mortar with a pestle in the presence of a small amount of distilled water. The concentration of the final insect extract was 1.5 cc of distilled water per insect. With a hypodermic needle, sugar-cane plants, three months of age, and growing in a complete nutrient solution, were inoculated below the growing point with the extract. One month later well-developed galls had developed on the young internodes of the inoculated plants. The control plants remained normal. To date stem galls have been produced by this same procedure on the following sugar-cane varieties; POJ 2878, H 109 and 32–8560.

In recent studies (1941) galls have been produced with an extract prepared, as described above, from adults of the corn leafhopper, *Perigrinus maidis,* and the pink sugar-cane mealybug, *Trionymus sacchari.* It was also shown that stem galls developed when extracts prepared from the corn and green leafhoppers were sterilized at 15 pounds steam pressure for 20 minutes, thus indicating that the stimulus to gall formation is chemical rather than biological in nature. It is possible that insects carry certain growth-promoting substances which when injected into plants during their feeding result in gall formation.

In these studies from 40 to 85 per cent. of the stalks injected with the sterilized and unsterilized insect extracts developed galls. In one series of inoculations stem galls were detected 12 days after the injections were made with the sterilized and unsterilized extracts. At the end of from 4 to 6 weeks the galls were well developed.

The galls, whether occurring naturally or from artificial inoculations, are at first small, watery blisters followed by raised translucent excrescences appearing on the young stalk tissue near the growing point. Later some of the galls develop into adventitious buds which give rise to shoot proliferation, while others develop into masses of irregular outgrowths assuming various shapes and sizes with no definite organization. In some instances the galls are exceptionally large and later develop enlarged buds and shoots.

There are two definite effects on cane plants inoculated with insect extracts: (1) the buds on the stalk in the region where the injections are made become stimulated and produce a rapid growth, and (2) stem galls develop on the meristematic tissue of the cane stalk. Shoots from stimulated buds have been rooted on the parent plant, separated therefrom and planted in the soil; shoots from adventitious buds arising from artificially produced stem galls are being treated in a similar manner. In the case of the latter certain shoots develop from greatly enlarged galls and manifest a marked stimulation when compared with normal shoot development. The resulting growth is being critically studied for growth, vigor and chromosome differences from the parent plant. This technique may afford one approach in securing polyploid plants in sugar-cane. It is conceivable that insects may play an important role in polyploidy occurring in nature.

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INDIVIDUAL SPECIFICITY OF DOG SERUM AND PLASMA

IN the course of a search for the hypothetical toxic factor responsible for increased capillary permeability characteristic of traumatic shock, it was noted that 0.2 cc of fresh serum or heparinized plasma obtained from normal, mongrel dogs, unselected as to breed and sex, always caused an increase in capillary permeability when injected intracutaneously into other dogs but not when injected into themselves. This increase in capillary permeability was demonstrated by the diffusion of the blue dye T–1824 into the area into which the serum or plasma had been injected. The dogs did not react to their own serum or plasma while they did to the same materials from other dogs. The intensity of the reaction varied in the different dogs. In one instance no marked increase in permeability was observed. In another, it was observed only with the material from two of the five dogs. In a third it was observed simply with the serum and not when the plasma was used.

We are indebted to Professor Stuart Mudd for pointing out to us the importance of this observation, since, as he states, it constitutes evidence of specificity, demonstrable by serologic response, characterizing individual members of a single species.

Since we have been called to active service with the armed forces, we do not feel able to continue these observations. We are pointing it out at this time in the hope that it may be helpful to other investigators who are working in this field.

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SCIENCE AND SOCIAL ACTION

THE scientific worker always has a divided personality, and in war-time his symptoms become even more acute. On one hand, he is an internationalist in his