Attached hereto is a general statement of a program that the committee considers necessary to carry out the work of eradication. It recognizes, however, that as time goes on modification may be necessary and it has confidence that such modifications should be determined by the law enforcement and research organization in charge of the work.

Progress Made in Eradication

In spite of the fact that the area considered as infested has shown accessions, the progress toward eradication has been rapid. Centers of infestation have been so thoroughly cleaned, and sources of infestation removed, that in the infested zone it is difficult to find any of the stages of the Mediterranean fruit fly. At the beginning of the campaign flies were numerous, easily found, and existed in great numbers at points of infestation. Measurement of progress is difficult. But the committee has been impressed with the rapidity of the clean-up work, the effectiveness of the poison spray campaign, the progress of inspection and its increasing thoroughness. Upon every side there is found evidence of increasing efficiency, and conviction upon the part of those in charge that they are making progress. A description of the physical equipment and of the methods used in carrying on the eradication program would be interesting but appears unnecessary in this report.

Representatives of organizations, citizens, joint committee of the Florida Legislature and the Plant Quarantine Board, as well as members of the staff of the federal and state organizations cooperating in this work, were examined by the committee. We were impressed by the solidarity of purpose.

No intimation was apparent of lack of confidence in a program of extermination. Desire was expressed to bring about eradication, and willingness to continue the work until brought to a successful conclusion was evidenced by every individual or organization represented.

Respectfully submitted,

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Committee

REVISED PROGRAM OF WORK TO ERADICATE THE MEDITERRANEAN FRUIT FLY

(1) *Inspection to Determine Spread*—Prompt provision should be made for inspection, adequate to determine the spread of the fly not only in Florida but possibly in other states. This will mean considerable enlargement of present inspection forces.

(2) *Host Fruits and Vegetable Certification*—Adequate provision should be made for the certification of all movement of host fruits or vegetables produced in any state or portion thereof invaded by the fruit fly.

(3) *Removal of Minor Host Plants*—As absolutely essential to the eradication object provision should be made under state regulation for the grubbing up or cutting down and removal—in other words complete elimination—of host plants of minor commercial importance, the object being to maintain, for the protection of the principal crop in each area, a non-host or starvation period during the interim of the maturing of such crop. It is understood that this is to replace any effort to eliminate the fruit from such alternate hosts from week to week as it ripens as impracticable both from the standpoint of accomplishment and of cost.

(4) *Destruction of Flies and Puparia*—Citrus growers in infested areas should be required under state and federal regulations to spray their groves at such periods as shall be required as necessary to destroy adult flies, and similarly, if practicable, soil treatment to destroy puparia.

(5) *Shortening of Cropping Season*—To reduce as much as possible the opportunity of the insect to breed up in the major host crop of any area, the shipping season should be terminated as early as practicable. The shipping season in Florida for citrus normally extends from September to June or longer. By more adequate provision for holding of fruit in cold storage and by enlarging methods of processing fruit it should be possible to terminate by the first of March the harvesting of the citrus crop, and similarly to shorten the period in the spring and early summer of other crops.

(6) *Orchard and Crop Cleanup*—As supplementing (5), provision should be made under state regulation for the prompt cleanup of orchards or other crops coincident with the close of the stated harvesting period. As corollary thereto all culls and discards should be promptly destroyed and drops should be removed at weekly intervals throughout the ripening and harvesting period.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW TYPE OF LYSIMETER AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

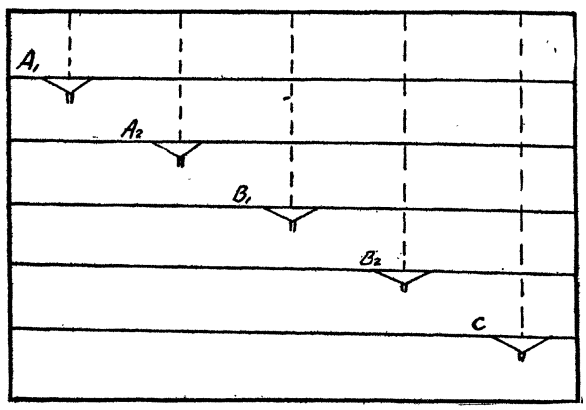
THE physical and chemical movement of the soil ingredients in the process of soil formation, the translocation of these in the soil profile are of primary importance in making up the soil body. The clear-cut separation of the soil horizons, the eluviation and illuviation are resultants of this movement and translocation. A study of this movement through the soil profile would reveal the nature of the process and explain the reactions responsible for the differentiation of the various horizons.

The drainage leachings of each soil horizon offer the means of studying the movement and translocation of these ingredients. More than that: such leachings would show how and where the various plant food ingredients added in the form of fertilizers or those which accumulate naturally in the surface horizon—especially in the virgin soils—are fixed and lost in the soil body.

The only rational method of studying the drainage of each horizon is to install a series of lysimeters at the depths of the respective horizons without disturbing the natural position of the soil profile. Such a system of lysimeters has been installed at the New Jersey Experiment Station on a virgin soil.

The lysimeters consist of flat funnels made of block tin 30 cm in diameter, 4 to 5 cm deep, with nine to ten 2-mm perforations in the center. A pit is dug 120 cm wide, 180 cm deep—the depth depends on the profile depth of the soil studied—and 360 cm long. Under each horizon a tunnel is made in the shape of the funnel. The funnel is filled with quartz pebbles and its sharp edge—3 to 4 mm—rests against the roof of the tunnel. The depth of the tunnel is about 50 cm, so that the distance from the funnel to the wall of the pit is about 20 cm. The funnel is wedged upward and the open space between it and the wall of the pit is filled with soil. After all the funnels have been placed under the respective horizons—100 cm apart on a horizontal line—a board wall is made 8 to 10 cm away from the soil wall and the space is filled in with soil.

Each funnel is connected by means of a coupling with a block tin tube 6 mm internal diameter. The tube leads to a copper receptacle. The accompanying diagram gives the front view of the wall with the



lysimeter funnels in place under the respective horizons.

The pit is covered with a shed roof extending just a few centimeters above the ground. A gutter leads the water off to a distance away from the area where the lysimeters are located.

The cost of a system of ten lysimeter funnels including the material and labor is about $175.00. It is well to remember that such an outfit may be installed anywhere and if the data obtained were either unsatisfactory or incomplete for any particular purpose, the lysimeter funnels might easily be dug out and placed elsewhere.

No data as yet may be offered, as the lysimeters have just been installed.

The model for this type of lysimeter equipment has been taken by the author from the Moscow Regional Agricultural Experiment Station, Moscow, Russia. As far as the author is aware this is the only place where such lysimeter equipment is functioning.

J. S. JOFFE
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THE GARGOYLE AS A SCIENTIFIC INSTRUMENT

MY little boy was sent one of these instruments for a birthday present. It proved a rather fascinating study that gives promise of having a certain use in connection with experiments in physiology. The operation of the instrument depends on one bulb being kept cooler than the other by evaporation of water whereupon the liquid occupying the full cross-sectional area of the tube is pushed from the warmer bulb uphill into the cooler. From the upper bulb it flows back in a stream to the lower bulb. Collecting there, it seals the tube and is pushed or drawn into the upper bulb again. The speed of operation depends upon the difference in temperature between the two bulbs and varies with the relative humidity of the air and with the amount of movement in the air. The variations are produced very quickly and it is from that standpoint, if calibrated, that it can be a useful instrument. In the following paragraph, I am giving a sample of the data expressed in readings of the number of passages of liquid during one-minute intervals.

To start with, the instrument had been in an ordinary room for two or three hours and in this experiment showed fifty-one "beats" while the operator was sitting within a foot of the instrument and breathing ordinarily upon it. Turning an electric fan on the instruments resulted in 107 beats per minute. Changing the fan from low to medium resulted in 109 beats. Turning off the fan and allowing the instrument to adjust itself, a minute later it made forty-two beats. Placing the instrument in a casserole and putting the top on, without, however, taking any special precautions to have an air-tight seal, after a minute it made thirty beats. The third minute following it made twenty-one beats, the fifth minute it made sixteen and one half beats, and in the eighth, eleventh, four-