plausible that the greater amount of light favored the development of the red color of the tomatoes in this experiment as they were ripened on vines which were grown during the fall and winter under inadequate light conditions. DUGGAR did not test the effect of light on the rate of ripening of fruits that were still attached to the vines and although most of the fruits were grown in the greenhouse he does not state that light may have been a limiting factor for growth. Moreover the temperatures, 60–75° F., maintained during the Purdue tests were considered by DUGGAR as satisfactory for the formation of the red color of tomatoes.

There was no significant correlation between the shape

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\text{shape} = \frac{\text{equatorial diameter}}{\text{polar diameter}}
\]

of fruit and the rate of ripening as is shown in table II, although the tendency is for the rapid ripening of ovate fruits (Red Pear) and for the slower ripening of oblate fruits such as Baltimore and Ponderosa.

There seems to be some correlation between the weight of fruit and the number of days required for maturity although the Baltimore is a notable exception and the other data are not altogether significant.

The ovate fruit shape also seems to be correlated with the smaller fruits (i.e., those that weigh less) although the Marglobe fruits prove an exception to this rule. This agrees with the results secured by LINDSTROM in working with hybrids of ovate and oblate varieties of fruit.—C. L. BAKER and H. D. BROWN, Purdue University.

TWO PLANT MATERIAL DRIERS

(WITH FOUR FIGURES)

In the preparation of plant material for the study of enzyme content it sometimes becomes necessary to hasten the process of drying if one wishes to retain the enzymes as they are in the living plant. The drawings on another page show a drier adapted to the use of heat, and another to the use of sulphuric acid. In both, the "dead" air around the material is obviated, in one case by the use of a fan, and in the other by the movement of the material in a rotating basket.

In the first (fig. 1), warm air is forced directly over the material, and no "dead" air is allowed to retard the drying. Most plant leaves dry within four hours at a temperature of 42° C. Quiet unheated air requires about 24 to 36 hours for a less satisfactory drying. The walls are of beaver board one half inch apart. The cross partitions are of copper wire fly-screen. A longitudinal partition separates them at the middle, making six compartments in all.

Fig. 1. Hot air plant drier.

Fig. 2. Section of sulphuric acid plant drier. 1. Iron shaft. 2. Mercury seal. 3. Rotating basket. 4. Hardware cloth screen. 5. Sulphuric acid.

Fig. 3. Detail of rotating basket. The top circular piece is not shown.

Fig. 4. Detail of mercury seal. 1. Attachment of shaft to motor. 2. Cork stopper through which the shaft is tightly fitted. 3. Glass tube rotating with the shaft. 4. Larger glass tube. 5. Mercury. 6. Cork with hole to accommodate glass tube "4." 7. Lid of desiccator. 8. Cork. 9. Glass tube. It should extend above mercury. 10. Shaft. 11. Attachment of shaft to basket.
The heating element is made of three feet of coiled wire similar to that used in hot plates. It is wound around a transite piece 2 x 8 inches. The fan is 9 inches in diameter, and rotates within the hood.

The "cold" drier (fig. 2) is not so rapid but may be employed at or much below room temperature. Its efficiency lies in the moving basket. We have found the electric motor stirrer most suitable for power. It is attached directly to the shaft and rotates at a speed of 70 r. p. m. The basket (fig. 3), has four compartments, and is made of one-half inch mesh hardware cloth. Two circular pieces held two inches apart by a cross of the same material are closed in by an outside band. If the cross-pieces are cut so as to allow the wires to extend on each side, and these used to bind them to the top and bottom of the basket, a solid construction is assured. A portion of the top is cut out above each compartment, a shaft soldered in the center and it is ready for service. A cloth lining may be needed when some material of smaller pieces is being dried.

Fig. 4 shows a detail of the mercury seal. If warm paraffin is poured into the mercury moat and out again it will be made mercury-tight.

The time of drying is reduced about two-thirds over that of non-moving materials above sulphuric acid.

Experiments are under way to test the relative merits of these two driers for drying plant materials for use in the study of plant enzymes.—A. G. Wood, Grove City College, Grove City, Pa.