a substance which causes follicle stimulation in the white rat is not present in the royal jelly of the honeybee. However, more detailed work may demonstrate the presence of a gonadotropic substance which may or may not be associated with caste production in the honeybee.

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CRYSTALLINE DROSOPHILA EYE-COLOR HORMONE

THE development of eye color in Drosophila is known to be controlled by specific diffusible substances desiginated as v^+ and cn^+ hormones. Khouvine, Ephrussi and Chevais[1] and Tatum and Beadle[2] have shown that these substances are amino acid-like in nature. The former authors in testing various amino-acids for v^+ hormone activity obtained results which indicated that tryptophane, when added to the larval food, was concerned with hormone production. This "tryptophane effect" was found to be due to the production by certain bacteria of a substance with v^+ hormone activity.[3]

This bacterially produced v^+ hormone has now been obtained in a pure crystalline state. The bacteria were grown on an agar medium containing dead yeast, sugar and l-tryptophane. The agar and yeast were precipitated in 80 per cent. alcohol. The hormone was then taken up in a mixture of butyl alcohol, ethyl alcohol and water, and was finally precipitated from absolute butyl alcohol. It was then crystallized from 90 per cent. ethyl alcohol. The crystals are very light yellow, elongated plates, usually forming in rosettes. The elementary analysis (made under the direction of Dr. A. J. Haagen Smit, of the California Institute of Technology) supports the empirical formula $C_{21}H_{34}N_2O_{14}$.

The crystalline hormone has an activity of approximately 20,000,000 v^+ units per gram[4] when a solution is injected into vermilion brown test larvae. Table I shows that within the limits of accuracy of the biological test, repeated recrystallization does not change the activity.

TABLE I

BIOLOGICAL ACTIVITY OF CRYSTALLINE v^+ HORMONE[4] (0.28 γ INJECTED PER LARVA)

Times hormone recrystallized	Maximum eye-color value	v^+ units per fly	v^+ units per gram hormone
1	3.1	6	21,400,000
2	3.1	6	21,400,000
3	3.3	7	25,000,000
4	2.9	5	17,900,000

[1] Y. Khouvine, B. Ephrussi and S. Chevais, *Biol. Bull.*, 75: 425, 1938.
[2] E. L. Tatum and G. W. Beadle, *Jour. Gen. Physiol.*, 22: 239, 1938.
[3] E. L. Tatum, *Proc. Nat. Acad. Sciences*, 25: 486, 1939.

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EFFECT OF EMANATIONS FROM SEVERAL SPECIES OF FUNGI ON RESPIRATION AND COLOR DEVELOPMENT OF CITRUS FRUITS

THE vapors given off by single moldy lemons inoculated from pure cultures were passed at a constant rate through cotton tubes into jars filled with 50 to 60 sound fruits. Respiration was determined by absorbing the CO_2 evolved in a solution of barium hydroxide. During this determination, which consisted of three one-hour tests, the container with the moldy fruit was disconnected from the jar. Hence the respiration values are for the sound fruit only and do not include the carbon dioxide given off by the moldy fruit.

The most pronounced effects were produced by the emanations from fruits inoculated with *Penicillium digitatum* (green mold), as demonstrated by a typical case in Fig. 1. The response was similar in 12 other

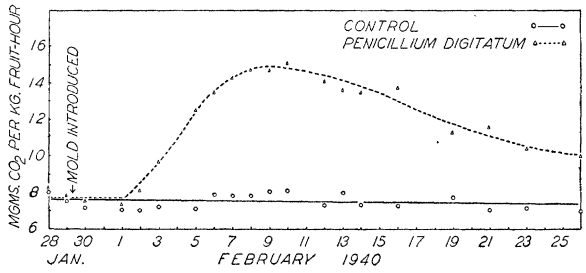

FIG. 1. Respiration of lemons as affected by the vapors of *Penicillium digitatum*.

experiments on lemons and in one test on oranges. The increase in CO_2 evolution by fruit subjected to green mold vapors over the control varied from 50 to 100 per cent. The activity of this fungus is definitely inhibited by low temperatures (2° C.), while higher temperatures (25° C.) do not appear to cause any accelerated effect as compared with 14.5° C. used normally for these experiments. It seems that there are no specific substances present in the fruit which are essential for the production of the active vapor, because *Penicillium digitatum* grown on an agar medium (to which dextrose and potato broth was added) brought about the same results.

Another striking feature of these tests is the very

[4] See reference cited in footnote 2 for significance of eye-color values and units.