morph in a *heterozygous* condition, the homozygous giving unmottled seeds. This peculiarity results in a new ratio, 18:18:6:6:16, instead of the anticipated 27:9:9:3:16. Latency is held to mean invisibility and not inactivity or dormancy. BATESON'S "presence and absence" hypothesis, in which the presence of any character is said to be dominant to its absence, is believed to be of general validity; and his[13] more recent terms "epistatic" and "hypostatic," as applied to the capacity of one unit to hide or be hidden by another, are accepted. Thus in MENDEL'S original case, yellow in cotyledons is not to be considered "dominant" over green, but dominant to the absence of yellow and "epistatic" to green, i. e., according to SHULL, causing its "invisibility" but not its "inactivity." This change of view involves some nice distinctions, but appears to obviate some of the difficulties of the older view of dominance, especially in connection with ontogeny. Incidentally all that remains of the Mendelism of MENDEL is his hypothesis of gametic purity. The superstructure erected upon this has grown in complexity with great rapidity.

With latency thus clearly defined, four types of latency are discussed: (1) "*Latency due to separation*, in which an allelomorph when acting alone has no external manifestation, and is only rendered patent by combining it with another allelomorph." This type of latency is not uncommon, and gives rise to such ratios as 9:3:4, 9:7, 27:9:28. (2) "*Latency due to combination*, in which two dominant allelomorphs, each giving rise to a peculiar character when acting alone, lose their external manifestation when coexisting in the same zygote." This gives the ratio first mentioned above in mottled beans, and may account for certain "mid-races." (3) "*Latency due to hypostasis*, in which the presence of one allelomorph cannot be detected owing to the presence of another allelomorph, the character produced by the latter being unmodified by the activity of the former." For example, a black bean is shown to hide a distinct-brown allelomorph, and a dark orange bean to carry invisibly a light-yellow allelomorph. This condition may give such a ratio as 12:3:1. (4) *Latency due to fluctuation*. Disappearance of characters under unfavorable conditions of nutrition, etc.; a very common phenomenon which may cause discrepancies from the expected ratio. Some of the cases formerly called "incomplete or partial dominance" would probably be classed here. Ratios may also rarely be modified by the failure of certain allelomorphic combinations to form a zygote which will develop.—R. R. GATES.

Respiratory chromogens.—PALLADIN[14] has devised a new, very simple, and effective method of detecting the respiratory chromogens in plants. He uses this method to show the wide distribution of these chromogens in the plant kingdom. In 71 species, ranging from liverworts to dicotyledons, this method showed these

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13 BATESON, WILLIAM, Facts limiting the theory of heredity. Science **26**:649–660. 1907.

14 PALLADIN, W., Die Verbreitung der Atmungschromogene bei den Pflanzen. Ber. Deutsch. Bot. Gesells. **26a**:378–389. 1908.

chromogens in 67. Their existence in three of the other four species can be demon strated by other methods. He mentions various fungi that other investigators have shown to contain chromogens, as well as various other higher forms. The points in the literature of this very important subject are briefly and clearly stated.

The same investigator finds[15] that portions of leaves in a 20 to 25 per cent. saccharose solution for seven days show a great increase in respiratory chromogens, over checks immediately taken from the plant, or those kept in distilled water for the samé length of time. Illumination during the treatment increases somewhat the chromogen production. If this treatment is continued for 17 days in light, the portions of leaves take on a bright-red color. The color he believes originates from the oxidation of respiratory chromogens. He holds that the sugar greatly increases the respiration and therefore the respiratory chromogens. Whether the chromogen shall become chromatic depènds upon whether the oxidases exceed the reductases in activity. In long-continued exposures this seems to occur, hence the red color. He believes that OVERTON'S explanation of spring and autumn coloration of leaves is not complete with the consideration of low temperature (as lowering respiration) and abundant supply of sugar as the factors, and considers the relative activity of oxidases and reductases on the chromogen products of respiration as very important.—WILLIAM CROCKER.

Graft hybrids.—WINKLER[16] has begun a series of experiments in the endeavor to produce graft hybrids, such as the well-known *Cytisus Adami* is believed to be. He uses for this purpose certain members of the Solanaceae and Capparidaceae. The method is to graft one species on another in the ordinary manner, and after the scion has "taken," to sever the stem at a point where the tissues of both species will be cut. Adventive shoots then grow out from this cut surface. These will have the characters of either species according to the point they grow from. Shoots arising from the point of contact of the two species gave a peculiar result, which may be described. A scion of *Solanum nigrum* was grafted in this way on a seedling of *S. lycopersicum*, and the shoot in question, originating from the point of contact of the parental tissues, bore leaves having on one side of the stem the characters of *S. nigrum*, and on the other side those of *S. lycopersicum*. In certain cases where leaves were situated on the meeting-line of two kinds of cells, one-half of a leaf showed the characters of either parent. WINKLER proposes to call such organisms, in which one side resembles either parent, "chimeras," and for this plant proposes the name *Chimera Solanum nigrolycopersicum*. He concludes that the cells of two different species may come together in other than a sexual way, and thus serve as the starting-point for an organism which shows simultaneously the characters of both parent species.—R. R. GATES.

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[15] PALLADIN, W., Ueber die Bildung der Atmungschromogene in den Pflanzen. Ber. Deutsch. Bot. Gesells. **26a**: 389–394. 1908.

[16] WINKLER, HANS, Ueber Propfbastarde und pflanzliche Chimären. Ber. Deutsch. Bot. Gesells. **25**: 568–576. *figs. 3.* 1907.