(8) The brain of a case of Trypanosomiasis did not show small celled infiltration.

(9) Animals infected with *Trypanosoma Gambiense* show sometimes changes in the nervous system, localised in the grey matter, hæmorrhages, lymphocytes, and a few leucocytes in the peri-vascular space: hæmo-lymph glands in large numbers, and sometimes necrosis of the spleen and degeneration of the bone marrow.

(10) Animals infected with *Trypanosoma dimorphum* exhibit similar changes in the nervous system and organs. A far greater deposit of pigment in the lymph glands and in older cases in the spleen is present.

Further Experiments on Inheritance in Sweet Peas and Stocks: Preliminary Account.

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Later results have provided expressions which include many of the peculiar phenomena of inheritance already witnessed in sweet peas and stocks. In sweet peas we have shown that purple may occur, as a "reversion," from the cross between two whites, one having long pollen grains, the other round. Similarly in stocks, white glabrous × cream glabrous gives "reversionary" F_1 purple hoary. (In both cases the parents are whites, *i.e.*, free from sap-colour, for cream is due to yellow plastids, recessive to colourless plastids.)

The appearance of coloured flowers is due to the simultaneous presence in the zygote of two factors, belonging to distinct allelomorphic pairs, which may be spoken of as C, *c*, and R, *r*, the large letter denoting presence, the small letter the absence of the particular factor.

Hoariness of stocks is similarly due to the coexistence of two other factors, and the presence of either of these factors is also allelomorphic to its absence. These two pairs are spoken of as H, *h*, and K, *k*. But, though H and K may both be present, no hoariness is produced unless C and R, the colour-factors, are also both present. For the actual development of hoariness four factors are thus required. The existence of white-flowered hoary plants creates a difficulty; but white *incana* is evidently a coloured

form in reality, for its flowers tinge on fading, and its embryo has the deep-green colour characteristic of purple varieties. Apart from breeding-tests, however, white hoary *Bromptons* show no visible indication of colour, and as yet they constitute a marked exception.

White glabrous and cream glabrous types contain both H and K, the two elements of hoariness. One of them contains C and the other contains R. All sap-coloured types studied contain one only of the two factors H, K. Consequently, we find the following result, which formerly seemed paradoxical:—

			F_1.
1.	Cream glabrous	× Red or purple glabrous	Red or purple hoary.
2.	White glabrous	× Ditto	Purple hoary.
3.	Cream glabrous	× White glabrous	Ditto.
4.	Any red or purple glabrous.	× Any red or purple glabrous.	Red or purple glabrous.

The truth of this account appears from the fact that in F_2 from cream glabrous × white glabrous all the coloured are hoary and all the whites are glabrous. Again, purple (hoary) *incana* × cream glabrous gives in F_2 all the hoary plants *coloured*, and all the glabrous plants *white*; while "white" (hoary) *incana* × sap-coloured types gives in F_2 coloured hoary, coloured glabrous, and in addition tinging "whites" in both classes.

When a character is produced by the meeting of factors belonging to two distinct allelomorphic pairs, the F_2 ratio will be 9 : 7 (*i.e.*, 3+3+1), and consequently, when in sweet peas and stocks a coloured F_1 is produced from two non-sap-coloured types, the F_2 ratio is 9 coloured : 7 white; but there are 4 gametically-distinct types among the coloured and 5 among the whites. Most of these have been now recognised experimentally.

When F_1 is purple the coloured class consists of purples and reds. In both sweet peas and stocks the ratio is 27 purple, 9 red, 28 white, composed thus:—

$$27 : 9 : \underbrace{9 : 9 : 3 : 3 : 3 : 1}_{28}.$$

The purples are due to the presence of a "blue" factor B, allelomorphic to *b*, its absence. Unless C and R are both present, B cannot be perceived without breeding tests. The three pairs, C, *c*, R, *r*, B, *b*, by entering into all possible combinations according to the simple Mendelian system, give the results observed.

This scheme takes no account of the sub-classes which sometimes occur

in both purples and reds. Several of these are merely superposed on the primary classes, while others are more complex and require further analysis. The distribution of the colours shows further complications when some coloured strains were introduced as original parents.

"Reversion" is thus seen to be a simple and orderly phenomenon, due to the meeting of factors belonging to distinct though complementary allelomorphic pairs, which at some moment in the phylogeny of the varieties have each lost their complement.

Pollen-characters in Sweet Peas.—Gametic coupling of a novel kind exists in this case. The whole generation in F_2 consists of 3 long : 1 round. The whites taken alone also are 3 long : 1 round. But in the purples there is a great deficiency of rounds, while in the reds they are greatly in excess. This result indicates that there is a partial coupling of the long pollen-character with the factor B, and a corresponding coupling of round pollen with *b*. This peculiarity only occurs in families which contain *both* purple and red members. The gametic output of F_1 in these cases is approximately

$$7AB + 1Ab + 1aB + 7ab,$$

where A is long, and *a* round pollen. This arrangement gives a close approach to the observed figures:—

	Purple.		Red.		White.	
	Long.	Round.	Long.	Round.	Long.	Round.
Observed	1528	106	117	381	1199	394
Calculated	1448·5	122·7	122·7	401·5	1220·5	407·4