to circulate in a 4th nymph decapitated *before* this period, the latter shows a premature 'metamorphosis' and develops adult characters. Two explanations of this result are possible: either (*a*) the moulting hormone of the 5th nymph differs from the moulting hormone of the earlier nymphs; or (*b*) the hormone is always the same, but the earlier nymphs produce in addition an inhibitory hormone which restrains metamorphosis. Of these alternatives the second appears to be correct. For if the 4th, 3rd, 2nd, even the 1st nymphs are merely decapitated around the 'critical period', a certain number of them suffer a precocious 'metamorphosis' and develop into diminutive adults; while others show intermediate characters (prothetely) —due, perhaps, to the varying quantity of the inhibitory factor present in the blood at the time of decapitation.

Two factors, therefore, seem to be concerned in the growth of *Rhodnius*: a factor initiating growth or moulting, and a factor inhibiting 'metamorphosis' —both probably secreted in the head, and perhaps in the corpus allatum. These results, which will shortly be published in full, confirm and extend the well-known conclusions of Kopeć[2].

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[1] Wigglesworth, V. B., *Quart. J. Micr. Sci.*, **76**, 270; 1933.
[2] Kopeć, S., *Biol. Bull.*, **42**, 322; 1922. **46**, 1; 1924. *Biol. Generalis*, **3**, 375; 1927.

Spontaneous Crossing-over between *X*- and *Y*-Chromosomes in *Drosophila melanogaster*

MULLER and Painter[1] showed that more than one-third of the *X*-chromosome is almost inert genetically and corresponds to a section of the *Y*, and Friesen[2] obtained crossing-over of autosomal genes in males by exposure to X-rays. It therefore seemed worth while investigating whether crossing-over takes place between the *X*- and *Y*-chromosomes in the male during normal meiosis. The gene under investigation, *bobbed* (shorter and finer bristles on the thorax), is the only one so far located both in the inert region and the *Y*-chromosome.

Males containing the mutant gene *bb* (bobbed) in their *Y*-chromosome and its normal allelomorph in their *X*-chromosome were crossed with bar-bobbed females with attached *X*-chromosomes carrying *Bbb* (bar eye) and a *Y*-carrying *bb*. By this method every change taking place in either *bb*-locus in the male can be detected.

The result of the cross was:

	Expected flies.		Exceptional flies.	
Phenotype	*Bbb*♀	normal♂	*B*+*bb*♀	*bb*♂
	422	566	4	5

The exceptional *B*+*bb* females (bar, non-bobbed) and *bb* males (non-bar, bobbed) could have arisen either by crossing-over or by mutation both of normal to *bb* in the *X*-chromosome, and of *bb* to normal in the *Y*-chromosome. The *B*+*bb* females could not have arisen by detachment of one of the attached *X*-chromosomes since they were homozygous for bar eye. The hypothesis of mutation seems to be excluded by the high frequency of the exceptions.

The possibility of spontaneous crossing-over in the males has been suggested by Stern's[3] discovery of translocation of parts of the *Y*- to the *X*-, and Darlington's[4] description of cytological conditions in the spermatogenesis of *Drosophila pseudo-obscura*, which makes the occurrence of crossing-over quite possible.

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April 28.

[1] *Z. ind. Abst.*, **62**; 1932.
[2] *Science*, **78**; 1933.
[3] *Z. ind. Abst.*, **51**; 1929.
[4] *Genetics*, **19**; 1934.

The Attitude of the German Government towards Science

PROF. STARK'S letter in NATURE of April 21 may not prove convincing to all its readers. The fact that 'non-Aryans' have been expelled from other posts does not necessarily justify their expulsion from scientific positions unless the premise that 'two blacks make a white' has first been conceded.

It is difficult also to reconcile his assertion that scientific research is perfectly free in Germany with the reported speeches of such officials as the rector of University of Frankfort, who is alleged[1] to have said, "Nowadays the task of the universities is not to cultivate objective science, but soldier-like, militant science, and their foremost task is to form the will and character of their students". This is not an isolated example of the attack on objectivity, on, in plain English, truth, which appears to be taking place in modern Germany. For that reason many British scientists feel that criticism of the present German government may not merely be of value to their expelled colleagues, but also to those 'Aryan' Germans who are still trying, under very difficult conditions, to uphold their country's great tradition of objective science.

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May 1.

[1] *Science*, June 2, 1933.

Psychology of Musical Experience

I HAVE long been impressed by a passage about Lagrange, the prince of mathematicians, in Thomas Young's biographical sketch: "In the midst of the most brilliant societies he was generally absorbed in his own reflections: and especially when there was music, in which he delighted, not so much for any exquisite pleasure that he received from it, as because, after the first three or four bars, it regularly lulled him into a train of abstract thought, and he heard no more of the performance, except as a sort of accompaniment assisting the march of his most difficult investigations, which he thus pursued with comfort and convenience."

I now notice that it correlates rather closely with a remark of Darwin, the prince of naturalists, in the well-known passage in his autobiography where, after describing the atrophy of his tastes for literature and painting and music, he proceeds: "Music generally sets me thinking too energetically on what I have been at work on, instead of giving me pleasure."

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April 5.