"adult males of *D. melanogaster* are useless for the study of meiosis" seemed improbable. I, therefore, made preparations from males of our Oregon line more than two days old.. The testes exhibited all stages of spermatogenesis.

In the course of various experiments, I have been able to study mitosis and meiosis in *XY*, *XO*, and *XYY* adult males of *D. subobscura* and in *XY* males of *D. melanogaster*. Primary non-disjunction of the sex chromosomes was observed in both species.

It is hoped that by using adult Drosophila males, problems which demand the simultaneous classification of phenotype and chromosome type may now be tackled with greater ease.

URSULA PHILIP.
Department of Biometry,
University College, London,
at Rothamsted Experimental Station,
Harpenden, Herts.
April 10.

[1] Huettner, A. F., *Z. Zellf. u. mikr. Anat.*, **2**, 615 (1930).

Proteins Susceptible to Cold in Pathological Sera

IN the blood of dogs infected with kala-azar, proteins are precipitated on cooling to room temperature (20° C.), or better still when allowed to stand in the ice-box (5° C.) overnight. This protein belongs to the pathologically increased euglobulin fraction. In twenty-one sera investigated (six cases) the cold fraction test was positive. In typical specimens, turbidity soon followed by precipitation sets in within a quarter of an hour of standing in the ice-box. The protein precipitated from kala-azar serum on cooling (cold fraction) is defined as the centrifugable protein fraction which precipitates after 24 hr. at 5° C., and is redissolved by warming to 37°–50° C. This cold fraction ranged between traces of turbidity which could not be determined quantitatively to maximal 3 gm. per 100 c.c. of serum. Typical cases gave tests as shown in the accompanying table:

Case	Total Prot.	Alb.	Glob.	Euglob.	Fibrinogen	Cold fract.	Dilution fract.*	Formol-gel
Dog 1	10·22	2·39	7·83	4·59	1·1	0·28	9·96	+
Dog 2	10·25	1·87	8·38	3·90	1·0	0·63	0·19	+
Dog 5	11·30	2·75	8·55	4·49	0·94	0·40	0·43	+
Dog 6	10·31	3·25	7·06	1·91	—	0·70	turbid	+
Human	6·06	1·72	4·34	1·81	—	+	+	+

* Dilution fraction: Dilution 1 : 30 with distilled water, centrifugable precipitate determined after 5 minutes standing at 20° C.

No clear-cut parallelism could be established between cold fraction Brahmachari and formol-gel tests. In Dog 1, identical cold fraction values were found simultaneously in serum (1·23 per cent) and exudate from artificial pleuritis (1·4 per cent).

The cold fraction is completely redissolved by warming to 37° C. In samples obtained from animals with particularly heavy infections, a relatively small fraction precipitates which is insoluble even at 60° C. If freshly drawn serum is allowed to stand at 37° C. for 24 hr. or at 60° C. for 30 minutes, precipitation in the cold occurs no longer. If the cold fraction is allowed to stand in its serum at 5° C. for a prolonged time, an increase or a decrease is observed; constant cold fraction values are scarcely ever obtained. A portion of this fraction does not redissolve on warming to temperatures up to 60° C. The cold fraction proved to be markedly labile.

In 0·9 per cent saline the cold fraction dissolves readily, and in this medium it is especially sensitive to temperature. At 70° C., irreversible heat precipitation occurs. The optimum *p*H, both of cold and heat precipitation, is at *p*H 5·7–6·2 (phosphate buffer). This fraction is particularly susceptible to diminution of salt concentration of the solvent.

Although the serum contained cold fraction, none was found in saline extracts obtained from tissues (lymph nodes, bone marrow, spleen, liver) of a dog suffering from kala-azar.

Hamsters infected with kala-azar showed no hyperproteinæmia and no abnormal proteins in the serum. The euglobulin values were normal. In dogs, visceral leishmaniasis is markedly chronic and is accompanied by a marked stimulation of the reticulo-endothelial cells; in hamsters infected with the strain of *L. donovani* used in these experiments, no such stimulation of the reticulo-endothelial system is produced.

We investigated five treated cases and one untreated case of human kala-azar. In all sera (eleven investigations) the cold fraction test was positive, but far less than in canine cases.

A large number of other pathological human sera was investigated as to the occurrence of the cold fraction. Only in a few cases of chronic infections (tuberculosis, malaria, osteomyelitis) was a weakly positive cold fraction test encountered. However, out of seven cases (twenty sera investigated) of endocarditis lenta, five cases gave positive cold fraction tests.

Precipitations which occur in plasma at low temperature are being investigated.

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L. STEIN.
E. WERTHEIMER.
Department of Pathological Physiology,
Hebrew University,
Jerusalem.

Reversible Quenching by Oxygen of the Fluorescence of Polycyclic Hydrocarbons

IN their recent letter in NATURE[1], Drs. H. Weil-Malherbe and J. Weiss have overlooked the work of Bowen and Williams[2], in which the reversible quenching by oxygen of the fluorescence of solutions of fifteen aromatic hydrocarbons was measured. The fluorescence of naphthalene was found to be quenched at least as powerfully as the 3 : 4 benzpyrene to which attention is directed. The absolute fluorescence efficiencies of the hydrocarbon solutions were compared with the absolute rates of oxidation, and it was found that for naphthalene, anthracene, rubrene, etc., the permanent oxidation was much less than corresponded to the quenching effect, proving that a reversible dissociation of the quenching complex hydrocarbon - oxygen into the original molecules must occur. The general relations between fluorescence quenching and actual photo-oxidation by oxygen appeared to be of a very complex nature.

E. J. BOWEN.
Physical Chemistry Laboratory,
South Parks Road,
Oxford.

[1] NATURE, **149**, 471 (1942).
[2] *Trans. Faraday Soc.*, **35**, 765 (1939).