THE British Secretary of State for the Colonies has appointed a tsetse fly and trypanosomiasis committee to consider and advise on the coordination of action, including research, directed against human and animal trypanosomiasis, and, in particular, against the tsetse fly as the chief vector. The committee, on which the Dominions Office and the Sudan Government are represented, will report from time to time to the Secretary of State for the Colonies, and on all matters affecting research its recommendations will be referred to the Colonial Research Committee for comment and advice before submission to him.

THE name of Professor A. C. Waters, geologist of the U. S. Geological Survey, was accidentally omitted from the article in SCIENCE of August 11, p. 126, giving the names of those who received stars for the first time in the seventh edition of American Men of Science.

DISCUSSION

IMPROBABILITY AND IMPOSSIBILITY

M. LECOMTE DU NOÜY, of the Paris Ecole des Hautes Etudes, in his remarks on this subject[1] has proceeded on the assumption that the evidence which gave the Heisenberg "principle of uncertainty" gave also the quietus to "the old determinism" and rendered the joint determination of the position and the velocity of an electron "a matter of absolute impossibility." But since what is an "absolute impossibility" is evidently determined, M. du Noüy feels at a loss and invites the comments of others.

The "uncertainty" about the behavior of an electron is ours, not necessarily the electron's. If the method for discovering this behavior happens to obscure half of it, that does not signify it to be undetermined. Neither does it signify "absolute impossibility" so far even as the discovery of the obscured portion is concerned. The discovery seems theoretically possible still, like, for example, observation of the other side of the moon.

In order to pronounce anything impossible, on empirical grounds, exhaustiveness of empirical knowledge pertaining to it is required. If we say that is itself impossible, we then presuppose it in the mere assertion. This shows that a judgment of impossibility on empirical grounds involves either a certain omniscience or else self-contradiction.

Now self-contradiction is the criterion of impossibility, on *a priori* grounds—the *a* which is not *a* is impossible. The notion of empirically ascertained impossibility is thus seen to entail the notion of purely logical impossibility. In logic there is an interesting distinction between kinds of implication, namely, the formal, or necessary, and the material; a distinction which powerfully illuminates the import of possible and impossible. Suppose a proposition entails another, as in the composite example: If it is October 13, it is a day of ill luck; then, by necessary implication, it is impossible that it be October 13 and not a day of ill luck, while by material implication it is possible (1) that it is not October 13, yet is a day of ill luck, and (2) that it is not the one and likewise not the other. The reason for (1) and (2) is just that they are contradicted by nothing before, hence are not known to be not the case; which allows the contingency of their being the case. Such contingency is synonymous here with possibility. In general, whatever is not irrational will be considered possible, in thought. This is an indication that possibility is legislated by thought.

Metaphysically the question (possibility) is equally interesting, and it has been a subject for eminent thinkers from before Aristotle to our own day. The solution proposed by Aristotle in his theory of entelechies, and other solutions from different viewpoints by numerous modern philosophers from Leibniz to Whitehead, have rendered the category of possibility into clear terms.

M. du Noüy's question about the color of the emulsion in an unexposed photographic film, and his further question of whether color is determinable in strict objective terms or must be considered subjectively, are questions, no doubt, of epistemological significance. Color might be variously defined, and it is conceivable (hence possible), that some one of the definitions would permit a determination of the emulsion's color, if any, without exposure; likewise that the definition would enable a physicist to tell whether a given substance was colorless. Should M. du Noüy require spectral hues for anything he would call color, and should it be known that the photographic film lacked these, that would be an instance of the colorless. Again, if perception were a requirement of the definition, and were always lacking, the question would be unanswerable. The definition of color is of course not one to be given on logical grounds merely; but since whatever is not illogical is possible, a definition permitting an answer to M. du Noüy's question is within the bounds of possibility.

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[1] In SCIENCE for October 13, 1944, p. 334.

PSYCHOLOGICAL DIFFERENCES AS AMONG RACES

PROFESSOR ASHLEY MONTAGU'S recent comments[1] on race differences leaves me with the feeling that I have misunderstood him or failed to understand him.

[1] SCIENCE, n.s., 100: 383–384, 1944.