

that the offspring of an existing species might be modified and eventually give rise to a new and hitherto inexistant species. Yet here was Koelreuter, who believed in the fixity of species, succeeding as a result of crossing *Nicotiana rustica* with *N. paniculata* and pollinating the hybrid offspring, generation after generation, from one parental species, in converting the offspring of one known species, *N. rustica*, into another known species, *N. paniculata*: transmutation without evolution.

Dr Olby's account of Mendel's life and of his formative years in Vienna is of the greatest interest, and shows the importance of the influence on young Mendel of Franz Unger, the botanist who in 1852 already denied the fixity of species, and particularly of the physicists Doppler and von Ettinghausen to whom Mendel must have owed his mathematical approach to the problem of genetic mechanism, which enabled him to do what nobody had done before and provided the setting for the spark of creative mental activity which he kindled. Remarkable also is the author's well argued case for the view that it was in order to study the problem of evolution that Mendel embarked on his experiments. This reinforces the conclusion, already arrived at by Fisher, that Mendel's paper reflects in many places his answer to Darwin's difficulties as expressed in the *Origin of species*, which Mendel must have read before he gave his paper.

Sound research in the history of science is capable of a kind of chain-reaction in throwing light on cognate problems. It was remarkable to find as the author did, that in a letter to Darwin, Francis Galton suggested the Mendelian system and ratios, and that neither sender nor recipient ever did anything about it. The falseness of the trail which Darwin followed in his unfortunate "provisional hypothesis of pangenesis" shows up all the more clearly in Dr Olby's analysis. He also has an ingenious alternative explanation for Fisher's demonstration that Mendel's ratios were too good to be true for the comparatively small number of individuals tested in his experiment. Fisher suggested that this was the result of over-enthusiastic assistants, who knew what Mendel wanted, giving the experiment "the benefit of the doubt" of difficult specimens. Dr Olby, who finds that the same problem arises with Tschermak's ratios, suggests simply that counting stopped when the expected ratio had been obtained. This startling solution, comparable to a cessation of counting votes at an election when the prediction of the opinion-polls has been realised, itself raises problems both of statistics and of methodology on the part of the experimenters. Another problem which partakes more of a moral nature, revealed by the author, is the equivocal behaviour of de Vries in acknowledging Mendel's priority, and his refusal to subscribe to the monument erected in Mendel's honour. As Dr Olby points out, if it had not been for those 44 pages published in 1866, Mendel's Law would be known as de Vries's Law. *Hinc illae lacrimae*. Wallace might have said the same of Darwin, but he did not. History of science, when written by scientists for scientists, can be not only of fascinating interest but of great importance, as Dr Olby's book is.

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BOOKS RECEIVED

- MOLEKULAR GENETIK. N. P. Dubinin. Gustav Fischer, Jena, 1965. Pp. 168. £1, 10s. 11d.
 SCHÖPFUNGSTAG UND MENSCH DER ZUKUNFT. Paul Lüth. Eugen Diederichs, Düsseldorf-Köln, 1966. Pp. 350. DM. 14.80.