

and pressing it between the upper parts of the filaments, cannot fail to pull asunder the anthers, and thus to cause many loose pollen-grains to fall down upon the proboscis, which are deposited on the stigma of the next flower following.* Thus, in both, cross-fertilisation is secured in case humble-bees visit the flowers, whereas butterflies may easily thrust their slender proboscis down to the honey without even touching the anthers, consequently without any benefit to the plant. Suppose, therefore, that *R. crista galli* (*a*) *major* were growing in the Alpine region, and visited frequently by butterflies, but never or only very exceptionally by humble-bees, all or nearly all the individuals would of necessity perish without leaving posterity, unless any modification of the flowers adapted to cross-fertilisation by butterflies appeared. *R. alpinus* may perhaps be considered as having originated in such a way; for the arrangement and mutual situation of all the parts of its flower is just the same as in *R. major*, with only this modification, that the entrance between the margins of the upper lip (*e*, Fig. 57), through which in both forms of *R. crista galli* butterflies as well as humble-bees thrust their proboscis, in *R. alpinus* is completely closed (*pp*, Figs. 54, 55), only a minute opening (*e*, Figs. 51-56) between two lateral flaps being visible at the tip of the beaked prolongation of the upper lip. No other insects except butterflies would be able to insert their proboscis through this narrow entrance into the flower; and butterflies, when doing so, could not fail to thrust their proboscis between the left and right anthers (as explained by the dotted line in Figs. 53 and 56), and to dust it with pollen-grains, which would partly be deposited on the stigma of the young flower next visited; for in young flowers (as shown in Figs. 51 and 53) the style overtops the tip of the beaked prolongation, and the stigma is placed before the minute opening, just in the way of any entering proboscis, whereas in older flowers the stigma is retracted behind the opening by an incurving of the style (as shown in Fig. 56).

HERMANN MÜLLER

THE TRANSIT OF VENUS

THE long-anticipated Transit of Venus took place yesterday morning; and already has the first instalment of news from distant observers arrived. The Astronomer Royal has been good enough to inform us that Col. Tennant's observations at Roorkee, India, have been quite successful; 100 photographs have been taken. He also telegraphs, at the moment of going to press, the gratifying intelligence that the micrometric observations near Cairo and Suez, and the photographic observations at Thebes have entirely succeeded.

At the last meeting of the Astronomical Society the Astronomer Royal gave an account of the final arrangements of the English parties, which do not vary much from those we stated some time ago. Messrs. Green have arranged for one of their outgoing ships to pass near Kerguelen's Land, with a view of picking up intelligence and telegraphing it from Melbourne.

The southern stations occupied by the American, French, and German parties leave no doubt that the Hallycan method will be extensively employed.

The final arrangements of the French parties have been telegraphed to yesterday's *Times* as follows:—

"France has six stations—three in the Northern Hemisphere, at Peking, Nagasaki, and Saigon; and three in the Southern Hemisphere, at Noumea, Campbell Island, and St. Paul's Island. Three of these, Nagasaki, Cochin China, and Noumea, present comparatively no difficulties as regards the voyage and installation. The Nagasaki Commission is headed by M. Janssen, member of the Institute and the Board of Longitude, who has taken part in several scientific voyages resulting in important discoveries. He is assisted by M. Tisserand, superintendent of the Toulouse Observatory, and M. Picard,

* H. Müller, "Befruchtung der Blumen durch Insecten," p. 294, *et seq.*

a naval lieutenant, who will employ the photographic apparatus of MM. Fizeau and Cornu, while a professional photographer will use an apparatus invented by M. Janssen. In Cochin China there will be only one observer, M. Héraud, a hydrographic engineer. It was at first decided, as a measure of economy, to dispense with the observations in Cochin China, but it was ultimately resolved to profit by M. Héraud's presence in the colony. He will probably be stationed in Tonquin, of which he is preparing a map. M. André, of the Observatory, and M. Angot, of the College of France, have proceeded to Noumea with an equatorial and photographic lens. The observers at Peking, St. Paul, and Campbell Islands have had to encounter greater difficulties. It is not very easy to reach Peking with cumbersome luggage. The Commission has had to reach Tien-tsin by Suez and Shanghai, and thence proceed in junks by the canals. It is headed by M. Fifuriais, a naval lieutenant celebrated for his astronomical labours, and comprises two other naval officers, MM. Blarez and Lapiéd. Their return may be toilsome, as the winter will obstruct the transport of their instruments. At St. Paul and Campbell Islands the observers have had to found a temporary colony in uninhabited islands, without any resources. St. Paul, situated nearly in the centre of the line from the Cape to Australia, is the crater of a volcano which is becoming extinct. There are steep cliffs on all sides, but towards the west the cone sinks, and the interior of the crater forms a creek where vessels can penetrate. No pure water is to be found. The encampment has been established as near as possible to the sea, the salt water having to be distilled for drinking purposes. The St. Paul Commission is composed of M. Mouchez, captain and member of the Board of Longitude, the author of works on the coast of Brazil and Algeria; M. Turquet, naval lieutenant, long accustomed to astronomical observations, as his coadjutor; M. Cazin, an eminent Professor at the Lyceum of the Rue du Havre, who is entrusted with the photography; and a navy surgeon, M. Rochefort, who will devote himself to the natural history of the island. The Commission is accompanied by twelve naval officers and sailors. Campbell Island, the most distant station, is about 200 leagues south of New Zealand. It is likewise uninhabited, its climate seems disagreeable, and, unfortunately, the sky, as at St. Paul, is rarely free from clouds. It possesses, however, good water and a good port. The observers are MM. Bouquet and Hatt, both eminent hydrographic engineers; M. Courrejollès, naval lieutenant; and M. Filbol, the delegate of the Museum and the surgeon of the expedition. There are also twelve sailors. Everything necessary for the subsistence of sixteen men during three months has had to be transported to these two last stations, three months being necessary to determine the exact latitude and longitude of the observatories."

ON THE NORTHERN RANGE OF THE FALLOW DEER IN EUROPE

IN the interesting essay by Dr. Jeitteles, translated by Dr. Sclater, in *NATURE*, vol. xi. p. 71, many cases of the reputed discovery of the remains of the Fallow Deer are collected together to prove that the animal is indigenous in Northern Europe, and not imported from the south, as heretofore has been supposed by many able naturalists, such as Blasius, Steenstrup, Rüttimeyer, the late Prof. Ed. Lartet, and others. These cases are accepted by Dr. Sclater without criticism, and are deemed by him to place the importation theory, as it may be termed, in the category of "ancient fables." The question, however, seems to me, after many years' study of the fossil and recent Cervidæ of this country and of France, a very difficult one, not to be decided off-hand, and certainly not without a strict