

poison is so virulent, that when inoculated into the circulation of a dog, fatal rabies is the invariable result.

"3. Although the virulence of the poison is intensified in its passage from rabbit to rabbit, and from guinea-pig to guinea-pig, it requires many successive inoculations before it recovers its maximum virulence, when it has been previously attenuated in the monkey. Further, the poison found in the mad dog of the streets, which, as I have just said, is far from being of maximum virulence, when it is inoculated in the rabbit, requires to be passed through many individual rabbits before it attains that maximum.

"If we apply rationally the results I have just communicated, we can easily render dogs proof against rabies. The investigator may have at his disposal the virus of rabies in different degrees of attenuation; the non-fatal kinds preserving the economy from the effects of the more active and fatal kinds. Let us take an example. We take the virus of rabies from a rabbit which has died, after inoculation by trephining, at the end of a period of incubation exceeding by several days the shortest period of incubation commonly met with in the rabbit. This period invariably occurs between the seventh and eighth day after incubation by trephining with poison of maximum virulence. The virus from a rabbit with the longest incubation period is inoculated again, by trephining, in a second rabbit; the poison from this rabbit in a third. Each time the poison, which is becoming less and less virulent, is communicated to a dog. The latter is at length found capable of resisting a poison of fatal virulence. It becomes, in fact, entirely proof against rabies when the poison of the mad dog of the streets is introduced into its system, either by intravenous inoculation or by trephining."

The proposition for testing his discovery by a commission is this: "The crucial test which I would propose would consist, in the first place, in taking from my kennels twenty dogs proof against rabies, and placing them side by side with twenty dogs intended to serve as my witnesses. We should then have these forty animals bitten successively by mad dogs. If the facts which I have enunciated are correct, the twenty dogs which I believe to be proof against the disease would all remain healthy, while the twenty witness dogs would become infected with rabies. In a second and not less conclusive experiment we should take forty dogs—twenty vaccinated before the Commission, and twenty not vaccinated. The forty dogs would then be inoculated by trephining with the virus of the mad dog of the streets. The twenty vaccinated dogs would be proof against the infection, while the other twenty would all die of rabies, with symptoms either of paralysis or madness."

PRZEVALSKY'S WILD HORSE

GREAT interest is attached to the question of the origin of our domestic animals, and especially to that of the horse—which is generally supposed not now to exist in an aboriginally wild state. Every fact bearing upon this subject is of importance, and the discovery by the great Russian traveller, Przevalsky, of a new wild horse, more nearly allied to the domestic horse than any previously known species, is certainly well worthy of attention.

The horses, which constitute the genera *Equus* of Linnæus, and are the sole recent representatives of the family *Equidae*, fall naturally into two sub-genera, as was first shown by Gray in 1825 (*Zool. Journ.* i. p. 241)—*Equus* and *Asinus*.

The typical horses (*Equus*) are distinguishable from the asses (*Asinus*) by the presence of warts upon the hind-legs as well as upon the fore-legs, by their broad rounded hoofs, and by their tails beginning to throw off long hairs from the base, instead of having these hairs confined, as a sort of pencil, to the extremity of the tail. Up to a recent period all the wild species of *Equus* known to science were referable to the second of these sections, that is, to the sub-genus *Asinus*, known from *Equus* by the absence of warts or callosities on the hind-legs, by the contracted hoofs, and by the long hairs of the tail being restricted to the extremity of that organ. Of this group the best known species, commonly called wild asses and zebras, are (1) the wild ass of Upper Nubia (*Equus taniopus*), probably the origin of the domestic ass; (2) the wild ass of Persia and Kutch (*E. onager*); (3) the

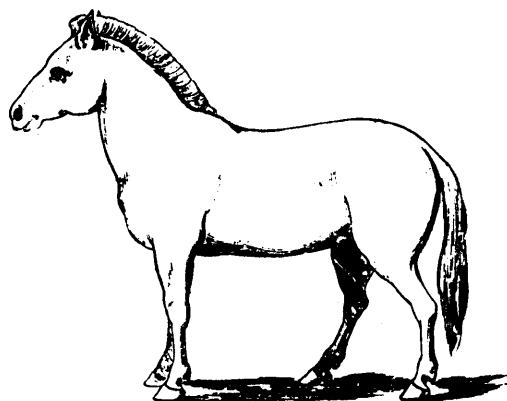
hemippe or wild ass of the Syrian Desert (*E. hemippus*); (4) the kiang or wild ass of Tibet (*E. hemionus*); (5) the quagga (*E. quagga*) of South Africa; (6) the Burchell's zebra (*E. burchelli*) of Southern and Eastern Africa; (7) the zebra (*E. zebra*) of Southern Africa. As already stated, these seven animals all possess the characters of the second sub-genus *Asinus* as above given, and no recent species of horse referable to the first sub-genus (*Equus*) was hitherto known to exist on the earth's surface, except the descendants of such as had been formerly in captivity.

Under the circumstances great interest was manifested when it was known that Przevalsky, on his return from his third great journey into Central Asia, had brought back with him to St. Petersburg an example of a new species of wild horse, which belonged, in some of its characters at least, to true *Equus*.

This new animal was described in 1881 in a Russian journal by Mr. J. S. Poliatow, and dedicated to its discoverer as *Equus przewalskii*.

The recently issued German translation of Przevalsky's third journey¹ enables us to give further particulars of this interesting discovery.

Przevalsky's wild horse has warts on its hind-legs as well as on its fore-legs, and has broad hoofs like the true horse. But the long hairs of the tail, instead of commencing at the base, do not begin until about half-way



Przevalsky's Wild Horse.

down the tail. In this respect *Equus przewalskii* is intermediate between the true horse and the asses. It also differs from typical *Equus* in having a short, erect mane, and in having no fore-lock, that is, no bunch of hairs in front of the mane falling down over the forehead. Nor has Przevalsky's horse any dorsal stripe, which, although by no means universal, is often found in the typical horses, and is almost always present in the asses. Its whole general colour is of a whitish gray, paler and whiter beneath, and reddish on the head. The legs are reddish to the knees, and thence blackish down to the hoofs. It is of small stature, but the legs are very thick and strong, and the head is large and heavy. The ears are smaller than those of the asses.

Przevalsky's wild horse inhabits the great Dsungarian Desert between the Altai and Tianschan Mountains, where it is called by the Tartars "Kertag," and by the Mongols "Statuur." It is met with in troops of from five to fifteen individuals, led by an old stallion. Apparently the rest of these troops consist of mares, which all belong to the single stallion. They are lively animals, very shy, and with highly-developed organs of sight, hearing, and smelling.

They keep to the wildest parts of the desert, and are

¹ "Reisen in Tibet und am oberen Laut des Gelben Flusses in den Jahren 1879 bis 1880," von N. von Prschewalski. Aus den Russischen frei in das Deutsche übertragen von Stein-Nordheim. (Jena, 1884.)