SPOTTED ASSES

An Animal That, Like the Camel and Elephant, Rarely Has Spots—Piebalds
More Common in Other Domesticated Animals—Selective Breeding
Probably Largely Responsible for This Albinism

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FOUR years ago when carrying on investigations of the hereditary spotting of human skin I one day chanced to recall that many individual members of the species of domestic and pet animals and fowls with which I am most familiar at home are spotted with white. The wild members of domestic species and the wild species most nearly akin to our domestic animals are typically or specifically marked. Seldom is this specific marking spotted white. A little time spent in the library showed that the spotting of most of the members of the species of domestic and pet animals is non-specific, and showed that all species of domestic and pet animals spot, except the elephants, camels, and asses (*Equus asinus*.) Further research revealed spotted individuals among the Asian elephants (*Elephas indicus*), and the African camels (*Camelus dromedarius*). Nowhere could I find record of spotted asses.

At that stage of my interest in the question of the spotting of animals and men I made a trip to California and Arizona, and returned *via* New Mexico and Texas. There are many thousands of asses (locally called burros) in those States. I inquired of a score of persons long resident in the southwest, but found no one who recalled ever having seen a burro marked with white spots. I spent eight weeks during January, February, and March, 1914, in Arizona from near the Mexican border to near the central part of the State. No one of whom I inquired had ever noticed a spotted burro. I began to think that the ass should be added to the traditional leopard as a conservative in skin pattern.

March 10, 1914, while driving immediately south of Tucson, Arizona, the burro shown in Fig. 7 was discovered. She was a small fawn-colored jenny with an irregular "blaze" face. She seemed determined to finish her feeding by the roadside, but was finally started toward home. She settled down "at home" in a small woven-wire corral with two other small jennys, one of which had a colt. The burros were in the possession of a group of Mexicans who had recently drifted northward from the State of Sonora, Mexico (a distance of about sixty miles), because of the revolution there. They reported they had brought the spotted burro from near the Mexican border where it had been sired by a jack which "looked just like it." The mother of the blaze-faced animal is light brown with the usual light colored muzzle and belly areas.

March 14, 1914, I passed by train through Charleston, Arizona, where there were three large brown burros feeding near the station. One of them had a blaze-face, and its right fore foot was also white to well above the ankle. The next day near Marfa, Texas, I saw two other white-faced brown burros. After that I felt that there was nothing new under the sun—even in the markings of burros.

IN MEDITERRANEAN LANDS

April and May, 1914, were spent in north Africa in Algeria and Tunisia, and in Sicily. In those countries I saw literally thousands of asses or donkeys. There were the usual ones of light fawn color, the browns, the blacks, the ash-grays, and a few which were white¹, but

¹ Lydekker speaks of the Damascus breed of asses as frequently exhibiting white animals. —*The Horse and Its Relatives*, p. 222.

A "BLAZE" FACE BURRO IN ARIZONA

Spotted horses, dogs, cows are common enough, but did you ever see a spotted ass? It is perhaps the rarest of the spotted domesticated animals, except man himself. One of the reasons for this may be that the ass has not been subjected to such severe selection in breeding as have most domesticated animals, and spotting or partial albinism seems to develop under stringent selection, while it is extremely rare in animals living under wild conditions. Photograph by Albert Ernest Jenks. (Fig. 7.)

I neither saw spotted ones nor spoke with men who had noted them. Near the close of May we were in Naples. One day a beautiful, spotted donkey, spirited and high-stepping like a hackney, dashed past me around the corner of Piazza del Plebiscito. He was probably fourteen hands high, and dragged a gentleman's stylish two-wheeled cart with unusual speed and action. He was white, except for dark (brown) ears, a nearly continuous dark dorsal line, and dark spots on the shoulder from four to six inches across. For ten days I kept my eyes open in Naples for that dashing donkey, but I never saw him again. Later, however, I saw three others of the same appearance, though these

latter animals were somewhat smaller, and plodded along the roads as donkeys are supposed to travel. One was at Sorrento across the Bay from Naples. He is shown in Fig. 8. One of the other two was on the road from Amalfi to Cava, and the other was in the outskirts of Cava. All four of the spotted donkeys noted in or near Naples were, apparently from their markings, of the same breed. All were white with dark ears, dark dorsal stripe, and a few other dark areas arranged bi-laterally with noticeable symmetry. I was told by the owner of the spotted donkey photographed in Sorrento that his father had obtained it near Naples, probably a short distance to the north, and that in

SPOTTED DONKEY AT SORRENTO, ITALY

The leopard has spots and, according to tradition, does not change them; the ass, on the contrary, has not spots and appears very reluctant to acquire them. But here is an Italian specimen which is mostly spot, the original dark color being reduced to a few patches. His facial expression lends some support to a theory that has been advanced—that albinism is due to a lack of vigor. Photograph by Albert Ernest Jenks. (Fig. 8.)

that vicinity there were others of the same appearance.

It has seemed worth while to call attention to these two types of asses, the "blaze" face, and the white with bi-lateral dark areas, because it appears that asses spot much less frequently than other domestic animals, with the exception of the elephant and the camel.

SPOTTING AND DOMESTICATION

So far as I am able to learn there are few exceptions to the rule that the members of wild species are typically or specifically marked. There appears to be no exception to the rule that in domestication all have yielded individuals which are spotted with white. To what is this due? Is the seemingly more frequent spotting of domestic animals (including human) due to an upsetting of the normal process of

pigment metabolism in the conditions of domestication? Is the seemingly more frequent spotting of domestic animals due to the protection in domestication which saves the spotted individuals from the destructive selective forces which prey upon the animals of a natural (or "wild") environment? No matter which one of these conditions is the cause of the frequent spotting of domestic animals, and granting that both may have contributed, selection in breeding or forced interbreeding, or both, have probably greatly aided production of spotted domestic animals.

Selection by man has saved the spotted animals (even perfecting breeds with well-fixed spotted pattern), while clothing has saved the spotted man by making selection against spotted individuals more largely impossible. My colleague, Dr. C. E. Johnson, Department of Animal Biology, University of Min-

nesota, calls my attention to the fact that the ass, camel, and elephant have been the subjects of selective breeding to a relatively low degree as compared with most of the other domestic animals. The number of "breeds" among them is very small. This fact lays strong emphasis on selective breeding as the important factor in the spotting

of domestic animals. However, we have the cases of spotted humans which are certainly not due to selective breeding. In the case of the human I am obliged to believe that domestication with its frequent large demands on nervous energy plays an important part in the production of the albinotic spottings of the skin.²

² Short bibliography of piebald humans:

1. Hutchinson, Sir Jonathan, "On Paleogenetic Face-pattern in Acroteric Piebalds," pp. 1479-1481 of *The British Medical Journal*, vol. I, June 18, 1910.
2. Simpson, Q. I. (with W. E. Castle), "A Family of Spotted Negroes," pp. 50-56 of *American Naturalist*, January, 1913.
3. Pearson, Karl, (with E. Nettleship, C. H. Usher, and B. C. Lamb), *A Monograph on Albinism in Man, Atlas, Part 2*, (London, 1913.)
4. Stannus, Dr. Hugh, "Anomalies of Pigmentation Among Natives of Nyasaland; A Contribution to the Study of Albinism," pp. 333-365 of *Biometrika*, October, 1913.
5. Jenks, Albert Ernest, "A Piebald Family of White Americans," pp. 221-237 of *American Anthropologist* (N.S.), vol. XVI, No. 2, April-June, 1914.
6. Cockayne, E. A., M.D., "A Piebald Family," pp. 197-200 of *Biometrika*, November, 1914.

Bad Eyes and Bad Hearts

As the latest theory of heredity assumes that every inherited factor in the germ-plasm affects not one but many parts of the body, interest in searching for these parallel effects, these "correlated variations," is increased. J. Strebel finds an association between certain hereditary forms of eye-defect (ektopia, myopia) and a weak heart, and reports the discovery

in the *Archiv für Rassen- und Gesellschafts-Biologie* (X, 4). Evidence is not sufficient to show how close the relation between the two facts is, or whether indeed it is really a matter of heredity, rather than of chance association. It should be easy to collect further cases to determine whether these hereditary defects of the eye are regularly accompanied by defects of the heart.

War Hurts Scientific Breeding Abroad

Intelligent live-stock breeding is going by the board in France and Germany, and production "regardless of consequences" is being insisted upon, according to the *Agricultural Gazette of Canada* (p. 206, March, 1916). The exportation of cows is said to have been prohibited and orders given that all cows must be bred, no matter whether in accordance with a scientific plan of herd- and breed-improvement. "This

means," says the *Gazette*, "that the education of a century will be partly undone abroad, and a breed of worse than grades—mongrels—is likely to be created that will have to be regenerated." Probably the result will be that Europe will have a much smaller amount of purebred stock for export after the war, than before, and American breeders will therefore be thrown more upon their own resources.