prising amount of damage by inflicting gunshot wounds on saplings. A number of our seedlings bore such wounds and in some cases blight had evidently entered through the wound. Rabbits are very destructive to small sprouts and tender shoots which they shear off. Our Plot 4 had been browsed by deer. Plot 5 had suffered from fire, while Plots 1 to 4 had been ravaged by man. But chiefest enemy of chestnut is shading, for seedlings endure shade only with difficulty, while stump sprouts quickly dwindle and disappear. The best thing that can now be done for chestnut is to give it a careful release cutting; and wherever this has been done the chestnut shoots into rapid and healthy growth.

The question now arose as to why vigorous seedlings should be resistant to blight and why sometimes the chestnut is able to heal the cankers and continue living. It occurred to the writer that the chestnut canker might be comparable to the fungus-root or mycorrhiza. In both cases a higher plant is attacked by a fungus and in both the higher plant can resist the fungus. In the mycorrhiza the fungus penetrates to a certain distance within the root tissues, then coils, forms twig-like or spore-like structures, breaks down and is evidently absorbed by the root-cell with accompanying increase in size and stainability of the host nucleus. The writer collected diseased and healed cankers of the chestnut, sectioned them and studied them under the microscope. The diseased cankers were found to contain abundant mycelium penetrating freely through the tissues. The healed cankers, on the contrary, showed limitation of the fungus and there were all stages in the breaking down of the fungus with formation of typical "digestion cells" and enlarged host nuclei exactly as in the mycorrhiza. Apparently the resistance of the root to the fungus which results in a swollen mycodomatious organ is exactly the same sort of thing as the resistance of the chestnut stem which results in a swollen fungus-digesting knot on the stem.

We were next interested in the question of how the host limits the fungus. Why are some cankers healed while others are lethal? The problem again appears paralleled by the mycorrhiza: We know that the mycorrhiza is an organ of "mutualistic symbiosis" only when the host is growing vigorously, but that the fungus may become a parasite if the host's vigor is lessened. We know, moreover, that in any given species the fungus *always penetrates to a given depth* within the host tissues. In some species it penetrates only the epidermis, in others the outer cortex, in still others the mediocortex; but the central cylinder is never invaded and is usually not too closely approached. We know, too, that the central cylinder is the region of "food" transport and from the central cylinder elaborated materials pass outward toward the exterior of the root, being diluted by materials passing inward from the soil. Without having experimental data to support his idea, the writer believes that the osmotic coefficient for sap in the central cylinder is greater than that of the outer tissues of root or stem, and that the osmotic pressures decrease progressively toward the exterior. The writer suggests the following hypothetical picture of the relation of fungus to host as dependent on a balancing of osmotic pressures. As long as the fungus can maintain a higher osmotic pressure than the host sap it encounters, it penetrates into the host tissues; but whenever it encounters a higher osmotic pressure it is broken down and absorbed by the host cell. We know as a fact that this breaking-down process and "phagocytosis" occurs in a definite region in any specific mycorrhiza and we may suppose that it is to that region the elaborated materials have filtered from the central cylinder in sufficient quantity to raise the cortical ionic concentrations enough for them to break down the fungus. The pelotons, arbuscles, sporangioles, etc. of the mycorrhiza would then appear to be simply the pathological developments of hyphae in an unfavorable environment, just as the root hair will form curious knottings, etc. (even breaking down) when placed in an unfavorable ionic concentration. In the chestnut, the resistant canker is one possessing osmotic values great enough to overbalance the fungus. Resistant seedlings are those of healthy vigorous growth with salt-rich sap. Dying stump-sprouts are killed because the root systems are not able to retain their vigor after the tremendous major operation caused by removal of the large tree which formerly supported them.

ARTHUR PIERSON KELLEY

LANDENBERG, PA.

THE "BABOON BOY" OF SOUTH AFRICA

PERIODICALLY, for more than a decade, the South African as well as European and American presses have carried reports regarding a native South African boy nurtured by baboons. Relatively convincing evidence establishing the authenticity of the case has just become available for the first time, largely due to the offices of Dr. Raymond A. Dart, professor of anatomy at the University of the Witwatersrand, Johannesburg, South Africa, to whom the writer is indebted for a copy of the original documents relating to the case.

The data seem to indicate that the boy was discovered in 1903 by two troopers of the Cape Mounted Police. Coming across a troop of baboons playing in a clearing in a remote part of the South East Cape, they fired into the group, and were surprised to notice that one animal who was not as fast as the others was left behind. The laggard was caught and found to be a native boy between 12 and 14 years of age. The boy

was taken to a mental hospital, where he remained for a year, before being given over to a farmer, for whom he has subsequently worked.

When found, the "baboon boy" showed a rather atypical physical development, as evidenced by his long arms and the abnormal development of the haunches. He jumped about, and showed a strong desire to walk on all fours. He mimicked like a baboon and exhibited other animal-like mannerisms, such as a constant jerking and nodding of the head, the scratching of parts of his body with the index finger and a peculiar and frightened-looking grin. He violently objected to being washed, and had to be thrashed repeatedly for his dirty animal habits in and about the house. He could not speak, but chattered like an ape. He was very mischievous and wild and "full of monkey tricks." Although offered the best fare, he retained his old taste in food and preferred a meal of raw corn and cactus, once consuming as many as 89 prickly pears. He took no account of time, and always had to be called to do a particular task.

The "baboon boy" of South Africa thus represents an addition to the list of reasonably authenticated cases of human infants who have grown up under unusual stimulational circumstances, without access to human culture. This appears to be the first case of a human child adopted and reared by infrahuman primates. It is also important to note that although with continued human contacts the boy retained traces of his infrahuman associations, his adaptation to human institutions appears to have been markedly better than that of previously reported wild foundlings, such as the wild boy of Aveyron and the "wolf children" of India. The "baboon boy" became a dependable worker, was reported to be "remarkably intelligent" and developed the use of language, by which he was able to relate details of his past life among the baboons.

A more detailed and fully documented report of this interesting case will appear in the forthcoming issue of the *American Journal of Psychology*.

JOHN P. FOLEY, JR.
THE GEORGE WASHINGTON UNIVERSITY

A CORRECTION

IN a recently published volume on "The Origin of Submarine Canyons" the writer inadvertently credited to A. C. Veatch an excerpt from a submarine chart actually contoured by P. A. Smith, of the U. S. Coast and Geodetic Survey. The chart in question is Chart IVB of Special Paper No. 7 of the Geological Society of America entitled "Atlantic Submarine Valleys of the United States and the Congo Submarine Valley, by A. C. Veatch and P. A. Smith," and the excerpt appears as Plate III of the volume first cited above. In view of the heavy labor involved in contouring the charts accompanying the paper by Veatch and Smith and the beauty of the finished product, it would be unfair to Mr. Smith to permit the error to go uncorrected. Excerpts from two other charts are correctly ascribed to Dr. Veatch.

DOUGLAS JOHNSON

UNUSUAL EASTER DATES

THE very early and the very late Gregorian Easter dates are given in the following table; it covers more than eight centuries, from the Gregorian calendar reform (1582) to the end of the XXIVth century. The table shows that the most unusual Gregorian Easter date is March 24; it occurs, in 1940, for the second time since the Gregorian reform; if another calendar reform should occur during the next 450 years, the Gregorian Easter Sunday of 1940 will be the last one to fall on March 24.

GREGORIAN EASTER DATES

March 22	March 23	March 24	April 24	April 25
1598				
1693	1636		1639	1666
1761	1704		1707	
	1788	1799	1791	
1818	1845		1859	
	1856			1886
	1913	1940		1943
	2008		2011	2038
			2095	
	2160		2163	2190
2285	2228		2231	2258
	2380	2391	2383	2326

ALEXANDER POGO
CARNEGIE INSTITUTION OF WASHINGTON

SCIENTIFIC BOOKS

LAND MOLLUSCA OF NORTH AMERICA

Land Mollusca of North America (North of Mexico). Vol. 1, Part 1. By HENRY A. PILSBRY.[1]

IN 1837 Amos Binney began the publication of his "Monograph of the Helices Inhabiting the United States.[2] In 1851–57 Binney published "The Terrestrial Air-breathing Mollusks of the United States," Volumes 1–3 (these volumes were edited by Gould). At the death of Amos Binney, his son, W. G. Binney,

[1] 1939. Monograph No. 3, The Academy of Natural Sciences of Philadelphia, pp. xvii + 573, index, ix pp., 377 text illustrations, more than 2,000 figures. $7.50 to subscribers of complete set; separate, $10.00.

[2] *Jour. Boston Soc. Nat. Hist.*, 1: 466–495, pls. 12–19; 3: 353–438, pls. 7–26.