the fact that he probably knew absolutely nothing of Mendelian inheritance. It recalls delightfully Professor Jennings's address years ago in Princeton as president of the American Society of Naturalists.

Whether you (by *you* I mean any other agglomeration of souls) really wish for immortality as an agglomeration, I cannot tell. But I confess that "my mind to me a kingdom is"—not! Rather it is a fantastical republic, daily troubled by more revolutions than ever occurred in South America; and the nominal government, supposed to be rational, declares that an eternity of such anarchy is not desirable. I have souls wanting to soar in air, and souls wanting to swim in water (seawater, I think), and souls wanting to live in woods or on mountain tops. I have souls longing for the tumult of great cities, and souls longing to dwell in tropical solitude;—souls, also, in various stages of naked savagery;—souls demanding nomad freedom without tribute;—souls conservative, delicate, loyal to empire and to feudal tradition, and souls that are Nihilists, deserving Siberia;—sleepless souls, hating inaction, and hermit souls, dwelling in such meditative isolation that only at intervals of years can I feel them moving about;—souls that have faith in fetiches;—polytheistic souls;—souls proclaiming Islam;—souls mediaeval, loving cloister shadow and incense and glimmer of tapers and the awful altitude of Gothic glooms. Cooperation among all these is not to be thought of: always there is trouble,—revolt, confusion, civil war. The majority detest this state of things: multitudes would gladly emigrate. And the wiser minority feel that they need never hope for better conditions until after the total demolition of the existing social structure.

I an individual,—an individual soul! Nay, I am a population,—a population unthinkable for multitude, even by groups of a thousand millions! Generations of generations I am, aeons of aeons! Countless times the concourse now making me has been scattered, and mixed with other scatterings. Of what concern, then, the next disintegration? Perhaps, after trillions of ages of burning in different dynasties of suns, the very best of me may come together again.

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PROFESSOR OSBORN ON THE MAMMALS AND THE BIRDS OF THE CALIFORNIA TAR POOLS

IN the magazine *Natural History,* Volume XXV, pages 527–543, Professor H. F. Osborn has a paper on certain mural paintings in the American Museum of Natural History. These depict the trapping of Pleistocene mammals and birds in the asphalt pits near Los Angeles. Professor Osborn places the scenery and the existence and activities of the La Brea animals in the Ice Age. The mountains were there as now, but their summits were covered with snow, and this snow reached much farther down the mountainsides than it does now, even in winter time. He has, therefore, had his artists represent the higher peaks as heavily mantled in white.

Professor Osborn proposes a new theory to account for the presence of so many large animals in the tar pits. Instinctively the creatures avoided the dangerous pools, except perhaps during seasons of drought. Then they risked their lives to quench their thirst with the water thinly covering the treacherous tar. Would that the author of the theory had presented some evidence to show that, during that boreal climate and in that topographical situation, there was any such dearth of water. Even in the heat of summer at least a few streamlets probably descended into that rancho from the Santa Monica Mountains. Surely around the borders of the snow drifts of Old Baldy and of Mount Wilson, both plainly in sight, the thirsty animals might have found safe footing and water refreshing and abundant.

Professor Osborn suggests that intelligence, or the lack of it, played their part in the catastrophe. Three times as many camels and bisons were caught in the tar as of horses. Inasmuch as seventeen horses were entrapped and only thirteen Shasta sloths, the latter must have been rather superior beasts; but how can we measure the stupidity of the two thousand tigers and the three thousand wolves which perished there?

The earliest division of the Pleistocene epoch was one of the glacial stages. Ralph Arnold tells us (Mem. Calif. Acad. Sci., vol. III, p. 66) that at this time the Lower San Pedro beds were deposited and that they are filled with the shells of cold water mollusks. They repose on late Pliocene beds which also contain boreal mollusks. We have, therefore, evidence within a few miles of Rancho La Brea that the Pleistocene opened with a stage of cold climate.

Therefore, were there at that time and place any such animals as Professor Osborn is dealing with? Many of the mammals and of the birds were immigrants from South America; the native species were not of boreal, but warm temperate habit. It is evident, therefore, that Professor Osborn has referred his fauna to the wrong stage and the wrong kind of stage.

Immediately after the Lower San Pedro cold stage the Upper San Pedro beds were laid down; and these indicate a warm climate. As Arnold says (*op. cit.,* p. 29), the marine fauna living at San Pedro more nearly resembled that now existing on the coast two or three hundred miles farther south. In these beds, at San Pedro, species of mammals have been found which occur at La Brea, among them *Elephas*.

imperator. It can not, in the writer's opinion, be successfully controverted that the La Brea fauna existed during the first interglacial stage.

Scenes like that represented by the mural doubtless occurred, but they must have been infrequent. Osborn's census (his page 528) shows 5,237 animals caught. If the time required was two thousand years the risks run by elephants, camels, sloths and horses were not great. An elephant and a horse were entrapped in a century; a sloth and a camel every thirty-three years; a bison a little more frequently. The saber-tooths and wolves depended little for their living on the catches of those traps. Twenty-one carnivores perished for each herbivore. Evidently there is some as yet unthought-of explanation for the destruction of the wolves and saber-tooths. Professor Osborn's theory of illusory waters in a thirsty land is inadequate. Horses, bisons and elephants require water even more than do wolves and tigers.

Probably there are those who believe that the history of the tar pits was a short one and that the sanguinary performances enacted there were more nearly continuous; others, as the writer, that the history was much longer than two thousand years.

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AGE OF PRESBYOPIC VISION AS AN INDEX OF THE LONGEVITY OF PRIMITIVE MAN

IN normal individuals the onset of presbyopia during the fifth decade of life is a very striking and constant phenomenon. The loss to the individual of the ability to adjust his crystalline lens for near vision can not be regarded as otherwise than a handicap to that individual. Even in the life of primitive races such loss must of necessity have placed its victims in an unfavorable condition as compared with younger members who possessed clear vision from a foot to a hundred feet. In the case of modern civilized man such loss is very obvious and would work serious hardships were it not an easy matter to correct it by means of appropriate lenses of glass. The point I wish to bring out is that if primitive man had lived in any numbers beyond the fifth decade, it is not improbable that there would have developed through the survivorship of the more fit a race which would have retained elasticity of the crystalline lens for more decades than five. It is well appreciated that the above idea may be a case of "the cart before the horse" and that presbyopia may have been a small one of several factors causing the members of primitive races to die at relatively earlier ages as compared with the average age of death of modern civilized man. That a small percentage of persons possess an elastic lens for more than five decades shows the possibility of postponing presbyopia had there been any occasion for applying the law of natural selection. The presbyopic age falls in so closely with the average age of longevity in the past as expressed by Dr. T. Wingate Todd in "Age: the Piper," SCIENCE, September 3, 1926, that the matter seems to be more than a coincidence.

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THE INDICATION OF QUOTATIONS

WHEN the reader of a scientific paper encounters quotation marks he usually apprises his audience of the fact in one of various ways; he may say "quotation" where it begins and "end of quotation" at the end, or he may say "quotes" and "quotes closed." Where quotations are frequent the reader may fail to indicate them accurately because of the time and awkwardness involved, and misunderstanding may result. This difficulty has arisen, also, in the reading of proof by one person to another.

Perhaps there is a reader of SCIENCE who knows of something that has been done toward simplifying the indication? It is suggested that matters might be improved by using more easily vocalized expressions and by taking advantage of the inflection of the voice. The expression "coo," for example, might be conventionalized as the indicator of the beginning of a quotation and "cō" as the indicator of the end. These combinations are quickly and easily vocalized and the falling inflection in "cō," which occurs naturally, suggests the end of the quotation. Indicators of this character would scarcely be confused with the content of the paper being read.

Where conditions permit, perhaps tapping would afford a more effective mode of signalling. Two taps of a pencil on the table, for example, might be made the pre-quotational and one tap the post-quotational signal. Such indication would obviously stand out from the context.

One lecturer has been known to signal quotation by an arm gesture symbolic of brackets. A disadvantage of inaudible gesture, though, is that it is not noticed by those members of the audience who do not happen to be spectators at the right moment.

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THE CALORIMETRIC METHOD OF DETERMINING BLOOD FLOW IN THE EXTREMITIES

DR. STEWART'S communication, which appeared in SCIENCE for September 3, 1926, and which carries the title quoted above, is presumably a rejoinder to my special article which was printed in SCIENCE July 2, 1926, under the caption: "On the Elimination of Heat