

middle Paleozoic, but in the Permian diseased bones have been described by Renault, which were afflicted with caries, and he was able to discern something of the nature of the bacteria producing these lesions. Walcott³ has indicated the presence of bacteria in a much earlier period but, so far as I am aware, nothing of the diseased nature of fossil forms is known earlier than that stated above.

The lesions so far studied are the results of accidents, or of infections and none of them are very extensive. It is improbable that any of the lesions so far studied were so severe that the life of the individual afflicted was endangered. Certainly none of them are severe enough to have endangered the race. Troxell⁴ has suggested in the description of a pathologic camel phalanx from the Pleistocene of Texas:

The interesting pathologic phalanx is probably a result of exostosis or uncontrolled deposition of bony material. The bone was not broken, because it shows the same length as the normal one of the same size. Possibly the disease which caused the death of the individual also contributed to the destruction of the species.

It is to be doubted if lesions of this nature are ever fatal. They may result in the loss of usefulness of the member afflicted and in the case of the camel, aside from a stiffness in the foot afflicted, probably no other result was noticeable. Troxell has mentioned that the introduction of swampy conditions into that region was instrumental in the extinction of the fauna, and it is to be further noted that the swampy condition also produced the arthritic lesion in the camel phalanx, since arthritides are more commonly found in animals inhabiting moist places, and are particularly severe in extinct cave-inhabiting and fossorial animals.

It is not my intention to contend that disease has not been influential in the extinction of races; it probably has been; but those diseases which have left an impress on the

fossilized skeleton certainly can not be regarded as among those diseases which would produce widespread extinction. Some other has been the dominant factor. Among the labyrinthodonts, for instance, there is no evidence of disease on the skeletons, and we know that after a sudden rise and world-wide distribution of species, suddenly the whole group went out of existence. The same may be said of other early groups of vertebrates. The present results of the study of fossil pathology indicate the early appearance in geological time and widespread distribution of diseases of many kinds, but none of them, so far as these lesions may be interpreted, were sufficiently severe to have played a part in the extinction of any of the known races of vertebrates. They are to be regarded rather as chronic infectious or constitutional diseases which may have played a part in extinction, but there must have been some other and more powerful ally which is at present unknown.

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VERTICAL FILING FOR PAMPHLET COLLECTIONS

IN the issue of *SCIENCE* for November 24 Professor Storer calls attention to the important matter of properly caring for pamphlet collections. He also brings together in very serviceable form the data regarding the various methods which have been used in storing pamphlets. The writer merely wishes to add some items from his experience in using for this purpose ordinary commercial vertical filing cases.

When this system is used the pamphlets are placed in the drawers of the cabinet face forward and with the back of the pamphlet uppermost. It is thus possible to read the back title if the pamphlet bears one, or to separate the pamphlets slightly as one would cards in a card index and thus note the title printed or written on the front cover. Guides are inserted at convenient intervals to assist in finding the particular group of pamphlets desired. These guides may provide a series of

³ C. D. Walcott, 1915, *Proc. Natl. Acad. Sci.*, April, 1915, pp. 256-257.

⁴ E. L. Troxell, 1915, *Amer. Journ. Sci.*, Vol. XXXIX., p. 626, Fig. 14.

subdivisions as minute as desired, though in practise an average of one guide per inch will be found to be a generous allowance. Any pamphlet in the series may be found and removed without disturbing others, or the whole group bearing upon a single subject may be located instantly.

It goes without saying that the publications are protected in the most complete manner from dust, light and accidental injury and are at the same time kept perfectly flat and under light pressure.

The total floor space occupied is little if any greater than is required for storage on shelves. The horizontal extent of the case along the wall is less than in other types of storage. The latter point is often of great importance, due to the limited amount of wall space in many offices. Furthermore, the vertical file may be placed in the center of the floor if the room happens to be a large one. The entire cabinet with its contents can be moved from one location to another with no risk of disarranging the collection.

Storage in this manner is not as expensive as is ordinarily supposed. A vertical filing case which I have just received for my own use contains filing space equal to 110 inches of shelving. The cost is about twelve and one half cents per inch, without guides. This is not a transfer case, but a well-made five-drawer upright unit, invoice size. It is steel construction inside with oak exterior. Data are not at hand regarding the cost of filing in pamphlet cases, but shelving with closed dust-proof back if made of selected lumber and well finished would cost probably from seven to ten cents per lineal inch of filing space. If to this be added the cost of pamphlet cases the expense of the method can not be much less than that of vertical filing. The convenience of the latter is such that it would appear advisable to investigate it closely in every case before adopting another system. It offers particular advantages for personal use.

It should be added that the file that I am using accommodates papers with a greatest dimension of ten and one fourth inches. This will provide for most separates, though there

are of course a few which are too large. Larger drawers will cost about the same per cubic inch, but correspondingly more per lineal inch.

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PHRENOLOGY

It is gratifying to report the receipt of the following communication, relating to the lecture on "Phrenology" which was referred to in *SCIENCE* of December 29. The letter is dated January 4, and is signed by Professor Wm. A. Wilbur, dean of Columbian College, George Washington University.

Following your letters of December 21 and December 23, concerning an announced lecture on phrenology before the Enosinian Society, and following a letter of December 26 from Dr. Frank Baker, relating to the same subject, President Stockton directed me to see that the lecture was not given. On December 28 I notified the president of the society of President Stockton's directions in the matter, and I am in receipt from him of a letter of January 3 cancelling all arrangements for the lecture referred to.

President Stockton directed me to say that he felt sure you would wish to give this action of the university as wide publicity as the announcement and note over your signature in the issue of *SCIENCE* of December 29, 1916.

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QUOTATIONS

THE TEACHING OF SCIENCE IN GREAT BRITAIN

WHILE discussion is in progress as to the right principles upon which science, now beginning to be recognized as an educational essential, should be introduced into our curricula, it is well to wait until some general synthesis of opinion has been effected before attempting a general summary of conclusions. In practise, we shall arrive at the type of science teaching that commends itself to those who are most closely in contact with present needs and conditions. But it may help to clear the air of controversy if two points of view are restated which are coming into gen-