A peak at 11 grains might very well be due to actino-uranium. Those at 13 and 16 grains would indicate isotopes the ranges of which are remarkably close to proto- and radio-actinium.

The analysis of the curve is complicated not only by the fact that the relative abundance of the alpha-rays of the two series is unknown, but also that the shape of the frequency curve of a given member changes with the range. Data have, however, been

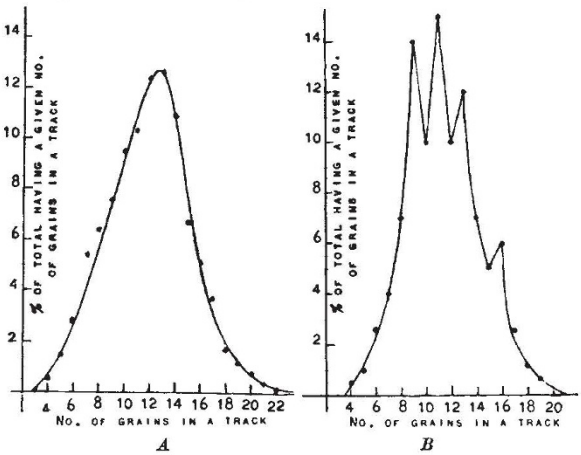


FIG. 1.—Typical alpha-ray frequency curves. *A*—Polonium. Polonium source above special laboratory lantern, emulsion 30$\mu$ thick. Data on 1038 tracks. *B*—Uranium. Sputtered uranium source above a special laboratory lantern, emulsion 30$\mu$ thick. Data on 2367 tracks. I—436, II—441, III—454, IV—544, V—492.

secured on this latter point. A study of the former using uranium from various geological horizons is expected to give an attractive method for determining the ages of rocks which appears to be free from errors inherent in the method based on U/Pb ratios. For the very recent uranium used in this work, the uranium and actinium isotopes seem to be about equally active.

T. R. WILKINS.
W. M. RAYTON.

University of Rochester,
Rochester, N.Y., July 3.

[1] NATURE, 117, 719; 1926.
[2] NATURE, 123, 313; 1929.

### The Influence of Asia

JUST recently there has loomed in the mist of the past some wider conception of historical beginnings. By stating these we may awake attention to any further detail that may clear the view; the ideas may be modified when we come to close quarters.

A wide movement seems to take place periodically from the Caspian region to Syria and Egypt. Saladin the Kurd with his Turkoman troops conquered Syria and Egypt by A.D. 1170. About 950 B.C., models of box wagons and wheels, like those of Anau and Assyria, are found in Palestine, brought by Eastern migrants, who were probably the followers of Sheshenq (named from the Persian deity "He of Susa"), who conquered Egypt 940 B.C. By 2370 B.C. the Hyksos swept into Egypt, using the horse, and the toggle pin for dress fastening, usual in the Caspian region. At 3100 B.C. a skilful race of builders, using the toggle pin, and daggers with raised ribbing, both belonging to the Caspian basin, conquered Palestine and Egypt, as the Seventh Dynasty. An Asiatic movement about 5500 B.C. brought lazuli and the use of the face-veil into Egypt. Long before that, the names of the principal sites of the Caucasus were embedded in the Osiris mythology of the Egyptians, brought with emmer wheat from that region by the Badarians, who were certainly Asiatic. Each of these invasions helps our understanding of the others.

Another serial connexion begins with the celebrated ivory carving of Gebel el Araq (4800 B.C. ?), bearing figures of animals that are unsurpassed for truth and grace; it belongs certainly to Elamite art, and exhibits the conquest of Egypt by the dynastic race coming from the Persian Gulf. Three or four centuries later there was a school of fine ivory carving—as the old king from Abydos—and after a similar interval the finest minute portrait carving of Khufu in ivory. It seems impossible to suppose a race re-inventing such skill disconnectedly; it is an obvious series. That compels us to assign the highest Egyptian sculpture of the pyramid age to a Persian origin.

The group of a deity restraining lions, on the same ivory of Gebel el Araq, is the first known example of a long train of such emblematic groups, where a god or goddess subdues horses, bulls, swans, wolves, or snakes, as a symbol of power over Nature, a symbol which pervaded Persia, Mesopotamia, early Greece, and Italy. Again western Persia has been the starting point. All of this indicates the link of civilisation between the Indus and Tigris which has been demanded by recent discoveries. The dates stated above are those given by the Egyptians.

FLINDERS PETRIE.

### Selection and Growth in Shore-Crabs

PROF. J. B. S. HALDANE in his new book entitled "The Causes of Evolution", p. 89, quotes the late Prof. Weldon as his authority for the statement that when the breakwater was built across the mouth of Plymouth Harbour, "the water inside became muddier, and the shore-crabs developed roomier gill-chambers". This is a complete mistake—in fact, a double mistake. Prof. Weldon did not assert that the branchial cavities of the shore-crabs had become larger, and what he did assert was shown by myself at the time to be incorrect. The subject is discussed in detail in my "Modern Biology" (1928), pp. 189-199.

The conclusion actually drawn by Prof. Weldon was that the increase of sediment in the water had, by selection, caused a decrease in the relative frontal breadth, which involved a better filtration of the water entering the branchial chambers. One point of my criticism was that efficiency of filtration could not be dependent upon a *relative* size of aperture, but must be proportional to the absolute size of aperture. The efficiency of a sieve is proportional to the size of the meshes, not to the total diameter of the sieve. Prof. Weldon's figures show that while the relative frontal breadth in thousandths of the carapace length was decreasing with increase in that length (that is, with the growth of the crab), and also in 1895 and 1898 as compared with 1893, the absolute frontal breadth increased in each year from 8 mm. to 11 mm. as the carapace length increased from 10 to 15 mm., and showed no decrease at all in one year as compared with another.

What Prof. Weldon actually investigated, therefore, was not a case of selection but a case of differential growth. The change of shape in the growing crab was known vaguely before; Prof. Weldon investigated it quantitatively in minute detail. But he did not show that the filtration of the water entering the branchial chambers depended on the relative frontal breadth, and he did not state that there was any relation between increased sediment and enlarged branchial chambers.

J. T. CUNNINGHAM.

35 Wavendon Avenue,
London, W.4, Sept. 10.