tion will be for the benefit particularly of those who propose to teach the elementary physics of the requirements for admission to Harvard College. Admission will be free.

— We learn from *Nature* that the conferences convened by the London Chamber of Commerce to consider the question of commercial education led to the appointment of a committee for the full discussion of the subject. This committee nominated a sub-committee, among the members of which were Sir John Lubbock, Sir Henry Roscoe, and Sir B. Samuelson. A scheme for the improvement of commercial education has now been drawn up by the sub-committee, and sent to various business-men, schoolmasters, and other authorities on education, with a request for practical suggestions. The scheme, as it stands, proposes as obligatory subjects for examination for a commercial certificate, (1) English; (2) Latin; (3*a*) French; (3*b*) German, Spanish, or Italian; (4) history of British Isles and colonies, general and modern history, including commercial history; (5) geography, physical, political, commercial, and industrial; (6) mathematics; (7) drawing. Proficiency is also required in at least one of the following: physics, chemistry, natural history, commerce, and political economy.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Twenty copies of the number containing his communication will be furnished free to any correspondent on request.

The editor will be glad to publish any queries consonant with the character of the journal.

The Ancient Works of Ohio.

AS investigation and explorations proceed, one ray of light after another pierces the mystery which has so long hovered about the ancient works of Ohio, enabling us thereby to catch glimpses of the prehistoric times of that great State. As was stated in a former communication, the evidence obtained through the explorations of the Bureau of Ethnology bearing upon the origin of the typical works of that State leave but little if any doubt that they were built by the ancestors of the Cherokees; but this must be understood as applying only to the circles and squares, and other works of this type, together with the mounds pertaining thereto, or bearing indications of having been built by the authors of the enclosures. The links of this chain have been gathered from the Ohio antiquities, the mounds and works of West Virginia, East Tennessee, and western North Carolina; in fact, the chain is not single, but multiple, for there are several distinct lines of evidence leading to the same conclusion. Some items bearing on this question have been published in *Science* and elsewhere, but since those appeared additional testimony has been obtained by the bureau.

But Ohio was the home of more than one mound-building tribe: there are good reasons for believing that we find here the work of six or seven different peoples or tribes: —

First, The typical works by the Cherokees, before mentioned.

Second, The walls, enclosures, and other defensive works of Cuyahoga County and other northern sections of the State. The key which will help to solve the riddle of the monuments of this type is to be found in central and western New York, the former home of the Iroquois nations: in other words, they are attributable to some branch of the Iroquois or Huron-Iroquois stock. It is possible, and even probable, that the works of Cuyahoga County are attributable to the Eries; but this, if admitted, is only another proof that this tribe pertained to the Iroquois group. The same type of works is also found in eastern Michigan as far north as Ogeman County.

Third and *Fourth*, The box-shaped stone graves. There is no longer any good reason for doubting that the burial-cists of this type, found in Ohio, are attributable to two tribes, — the Delawares and Shawnees; those of the central portion of the State, especially of Ashland County, marking the burial-places of Delaware Indians, and those found along the Ohio River the burial-places of Shawnees. There are, however, no marks or peculiarities by which the works of the two tribes in this State can be distinguished from each other. As but few graves of this type are found in mounds in Ohio, it is more than probable that they belong to the time of the later occupancy of this region by these tribes. Nevertheless there are some reasons for believing that some of the works in Hamilton County pertain to an earlier occupancy of that section by the Shawnees; but this point cannot be satisfactorily settled until further explorations have been made in adjoining portions of Kentucky.

Fifth, Certain stone mounds, and mounds containing stone vaults or graves of a peculiar type, which it would be difficult to explain without the use of figures, which cannot be introduced here. Sepulchres of this type have been found at various points in the northern half of Kentucky, from the extreme north-east corner of the State as far west as Union County; but in Ohio they have as yet been discovered only in a few of the extreme southern counties. This type of works is peculiar, and presents a problem to which we have thus far been unable to find any clew. It is probable that the builders belonged to a tribe which has become extinct. Unless certain works in north-east Missouri, which bear some resemblance to those of the type mentioned, are attributable to the same people, no traces of them are to be found elsewhere than in the sections mentioned. Is it possible that the appellation 'Bloody Ground' is an echo which has floated down the ages from prehistoric times? These sepulchres indicate a savage life and fierce warfare with beasts of prey.

Sixth, The effigy mounds, of which some two or three only are known within the limits of Ohio. These also present a problem difficult to solve. It is possible that some sudden freak of the medicine-men or medas of some one of the tribes mentioned may have brought about the building of these strange works, but such a supposition is far-fetched and without any basis. It is more likely that a straggling clan or small tribe of the Wisconsin mound-builders, — probably belonging to the Dakotan stock, — wandering toward the south-east, left these mementos of their passage. The bird-effigies of Georgia may possibly have been built by the same people. Such breaking-away of a clan or tribe and its wandering to a distant locality is not without parallel in Indian history.

Seventh, Fortifications of that type of which Fort Ancient is an example. Although I have introduced this type under a separate number, I am inclined to attribute the principal works of the class to the builders of the typical works of the State, — the Cherokees. This is also the opinion of most of our archæologists, yet the relation between the works in some cases is not apparent. Fort Ancient is an example of this kind. Moreover, there are some indications in this instance of the influence of the white man, especially in the northern section of the work.

Omitting the last from the list, there remains clear and satisfactory evidence that the ancient works of the State are due to at least six different tribes. CYRUS THOMAS.

Youngsville, Penn., June 25.

Distillation of Mercury at Ordinary Temperatures.

IN the physical laboratory of the United States Geological Survey a normal barometer hangs in a window-jamb about 35 centimetres from the glass of the window. As the window faces east, it has the sun until noon. The barometer-tube at and above the upper surface is 25 millimetres in diameter, and extends 6 centimetres above the mean position of that meniscus. It was observed that during the summer small globules of mercury covered the inner wall of the tube above the column, on the side farthest from the window. In the winter they collected upon the side nearest to the window. An inspection showed that the radiation from the tube was greatest toward the cool room in the summer, and toward the window and out of doors in the winter, thus keeping the side of greatest radiation slightly cooler than the mass of the reservoir, and condensing upon it some of the vapor of mercury of the Toricelli vacuum. In this way several grams were condensed and fell back in a single month, — a fact which seemed quite interesting when it is remembered that the vapor-tension of mercury at even 30° C. (86° F.) is only .06 of a millimetre. Of course, by bending the top of the tube over and downward toward the cooler side, the distillate could be collected and measured. W. HALLOCK.

Washington, D.C., June 21.