ABSTRACT SCIENCE AND PHILOSOPHY.

MESSRS. EDITORS:—I perceive that the press speaks slightingly of the proceedings of the American Scientific Association, in relation to abstract philosophy, which induces me to offer the following suggestions:—

1. Must not philosophy in the abstract precede that of the practical?

2. Must not a principle in philosophy and mechanics be first known to exist before it can be understood, and be understood before it can be reduced to practice? If so, the abstract knowledge of its existence precedes its practicability and usefulness.

3. Do not all natural compounds contain water? If so, then, did not the creation of water precede the formation of natural compounds?

4. Was not electricity once considered as an abstract principle of nature? What followed? Its utility, &c.?

5. Can vegetable and animal life exist upon air alone? No. Neither can such exist without it. Therefore, was it not necessary that the creation of the air should have been prior to that of vegetable and animal life?

6. Was not the expansion of fluids by heat once known as an abstract principle of nature? And from whence came the steam-engine? From chance? No. From an abstract knowledge of the principles of expansion, &c.

7. Does not abstract philosophy bear the same relation to practical science as the discovery of a new continent does to its colonization, and that of clearing the land previously to its agriculture?

8. Does not abstract philosophy constitute a basis upon which the practical man raises his structure of usefulness?

9. If abstract philosophy, when investigated, produces such good results for man (the American Scientific Association investigates abstract philosophy), is not man benefited thereby? J. Q.

New York, Sept. 7, 1859.

[1. If our correspondent means by "philosophy in the abstract" a knowledge of causation, we return a negative answer to his interrogation. There are many artists, physicians and others who practice certain rules with great success, and yet cannot explain the why and wherefore of the results produced.

2. We answer "no" to this question. The principle of gravitation was applied to turn water-wheels and operate machinery, ages before the law of gravitation was discovered. An abstract knowledge of its existence did not precede its practicability, but a knowledge of this law is useful and indeed necessary to every mechanic. With such knowledge, we can tell the power of any waterfall by measuring its hight; without a knowledge of it, we could not construct such a motor except by "guess work." As the source of a river is reached by navigating from the outlet up to the fountain-head, so in the practical arts, principles are generally discovered through practice. Archimedes and others constructed great machines without a knowledge of the law of *inertia*, which lies at the very foundation of the science of mechanics.

3. We return a negative to this question, and must say it is not a proper one. Water itself is a natural compound, being composed of oxygen and hydrogen. Its creation, therefore, could not have preceded that of natural compounds. Even if it were a simple body, we could not draw the inference of its precedence in the work of creation by any of its combinations with other bodies.

4. Electricity was never considered an abstract principle of nature, but a mysterious agent—a power, and and it is just as mysterious as ever. Many useful applications of electricity to the arts have been made by persons unacquainted with what some call "its principles."

5. We believe that the atmosphere was created before the organic creation, but they might have been created at the same time.

6. Of course the steam-engine was not a work of chance, but it was invented before the law of the expansion of fluids was discovered; it was the product of experiment. "An abstract principle of nature" is something rather indefinite. If a certain mode of operation is meant, then it is a law of nature, such as gravity and inertia.

7. The comparison of our correspondent in this interrogation is very beautiful; but as the discovery of a continent depends upon a practical act, like that of Columbus navigating his frail bark to "the western land," it is very different in its nature from abstract principles.

8. Abstract philosophy is not the basis upon which the practical man raises his useful structure. Our whole progress in modern science and art is due to experiment and observation, commenced first by Galileo in the 16th century.

9. To this question we will present some general information on the whole subject of science. In regard to abstract philosophy, we are still in doubt whether electricity, light and heat are qualities or substances. Yet many important properties or laws have been discovered, by means of which heat, light and electricity (whether they are properties or substances) have been regulated and employed, and from this we probably derive as much advantage as could be obtained from a complete knowledge of their essence. If by "abstract principles in nature"—as some understand the term—the essence of qualities and powers, such as gravity *per se* is meant, no one essence has yet been discovered, with all the advances which have been made in science. In short, our whole scientific knowledge is practical, as founded upon the philosophy of Bacon, We may have mistaken some of the views of our correspondent; probably our opinions are more in concord than they appear to be from the language we have both used.—EDS.

EAGLES—ORNITHOLOGY.

MESSRS. EDITORS:—I claim to have made a discovery in natural history, not laid down in any books which I have seen. In the winter of 1853 my son shot a large grey eagle, which measured nearly eight feet from tip to tip of the wings. One of the wings only was broken, so he was captured alive. He seemed to be an old eagle, was quite fierce, and so we kept him loose in our backyard and fed him for three years. After this he was given to Walter Hulet, of Niagara Falls, and within 18 months afterwards he changed his coat and became a bald eagle. His body is now nearly black, and his head and tail white as snow. This has confirmed my previous opinions that bald eagles are old grey eagles. I was led to this conclusion about 10 years ago by knowing the resting-place of these eagles on the west bank of Cayuga Lake, and where I saw the grey and the bald eagle living apparently in the same family. If I remember aright, Audubon has classed the grey, black, bald and golden eagles separately; but from the eagle now at Park Place, Niagara Falls, it is proved that the grey and bald, at least, are the same species. The only thing now to be ascertained is the period when the grey eagles change their coats. This one must have been old when he was shot, because if he had been young he might have become somewhat tame in six years; but he is still vicious as a hyena, and in captivity has never learned to forage much for his own food. J. P. C.

Seneca Falls, N. Y., Sept. 6, 1859.

THE SCIENTIFIC ASSOCIATION.

MESSRS. EDITORS:—I am sorry to see you, in your later numbers, ridiculing and carping at the members of the "Scientific Association," because you do not see that their studies and discussions are immediately useful. I cannot help thinking that the same spirit (if you had lived in those days) would have led you to hoot at Franklin for flying his kite at a thunder-cloud, or to have rebuked Galvani for spending his time in watching the twitchings of the hind legs of a dead frog; for you might not have foreseen the useful inventions that have resulted from their studies, any more than you can now foresee what valuable knowledge may be added to the general stock by diligent and careful observations of comet's tails and the Old Red Sandstone rocks. Which of the Great Creator's works is it beneath man's dignity to study?

WM. D. ARNOLD.

Beloit, Wis., Sept. 3, 1859.

[In answer to the concluding sentence of our correspondent, we say it is an honor for man to be permitted to study any of the works of the Divine Creator. We are of opinion, however, that his views and ours are not exactly reconcilable in regard to the transactions (not the members) of "The Association for the Advancement of Science." We would remind him that it is just such experiments as those of Franklin and Galvani which we have always advocated as the positive means of producing positive results. It was no less a body of *savans* than the members of the Royal Society of England—those who considered themselves the embodiments of science—that coughed in derision at the recital of Franklin's experiments; and we therefore think he has altogether misapplied the transaction to us. We reiterate our views expressed on page 139, relating to the undue prominence that was given to papers upon merely speculative subjects.—EDS.

CANADIAN LAKE AND OCEAN NAVIGATION.

In the SCIENTIFIC AMERICAN of the 13th ult., a short paragraph appeared in which it was stated that the western Canadians had at length imitated the Americans in sending one of their vessels from a lake port to Europe direct. We have receved two communications from Canadian correspondents, in which they assert that Canadians sent the first vessel to Europe direct, and we submit their proofs of this statement. The following is the interesting letter of our Kingston correspondent:—

MESSRS. EDITORS:—The first vessel that ever left the upper lakes for Europe was the bark *Lillie*, built near Kingston, C. W., for Capt. Hunter (now of Quebec), and sent from here, in the spring of 1848, for Liverpool, where she was sold and sent to the coast of Africa to traffic with the natives; but was lost on the coast of Ireland, where some wreckers, not knowing there was gunpowder on board, blew themselves and the vessel to pieces. The next vessels were the bark *Cherokee*, 400 tuns, built by I. Counter, for Capt. Gaskin, and the bark *Arabia*, 450 tuns, for J. Boyd & Co., in the winter of 1852-3. The first was sent in 1853 with a cargo of flour from Toronto to Liverpool, where she was sold, but the *Arabia* did not sail till 1854 for Liverpool, and after an unprosperous voyage returned in 1855, and has been on the lakes ever since. She is at present loading in Chicago. In the winter of 1853-4 a second vessel was built for the same parties as the *Cherokee*; namely, the bark *Cataraqui*, 650 tuns. She left Kingston in 1854 with staves, arrived at London, where Capt. Gaskin sold her, and in the winter of 1854-5, built the ship *Eliza Mary*, 850 tuns, which left Kingston with staves for Liverpool in 1855. A description of Capt. Gaskin's three vessels, also a view of the *Cataraqui* descending the Galop Rapids, will be found in the *Illustrated London News* of August the 12th, 1854.

The schooner *Dean Richmond*, which was the first American vessel that went to Europe direct, did not go till 1856.

The dates, cargoes, destinations, and list of American vessels which have sailed, will be found in the *Detroit Advertiser*, about the middle of May, 1859.

J. P. D.

Kingston, C. W., Sept. 1, 1859.

The following is also an interesting letter from our Toronto correspondent:—

MESSRS. EDITORS:—During the season of 1857 two Canadian-built vessels left the port of Toronto for Liverpool, namely, the bark *Reindeer*, 800 tuns, loaded with staves and lumber, and the full-rigged ship *City of Toronto*, 600 tuns, built at Toronto and loaded partly here and partly at Quebec. Also, in May 1858, the three-masted schooner, *Indian Queen*, 400 tuns, (built at Coldwater on Lake Huron, and known in the Collingwood and Chicago trade) sailed from this port loaded, and made the passage from Quebec to Liverpool in the short space of 25 days.

It is hardly necessary for me to say these vessels all arrived safely at their destination.

J. C. S.

Toronto, C. W., Sept. 1, 1859.

EARLY LOCOMOTIVES.—According to the *American Railroad Guide*, the first locomotives in the United States were imported from England, in the Fall of 1829 or Spring of 1830. The first Stephenson locomotive ever imported was the "Robert Fulton" in 1831, for the Mohawk and Hudson Railroad. The first locomotive built in this country was constructed at the West Point Foundry in 1830, for the South Carolina Railroad. The second was built for the same road at the same place. The third was built by the same establishment in the spring of 1831, and was the first locomotive ever run in the State of New York. David Matthew, who first run this engine, is still living in Philadelphia, and is one of our oldest inventors and locomotive engineers.