might thence infer the chemical properties of all known bodies by mathematical reasoning. Such a result, could it be obtained, would make chemistry a science even more nearly perfect than astronomy.

Gustavus Henrichs of the University of Iowa, as well as one or two others, presented papers which may be regarded as first attempts towards bringing the science of chemistry into this perfect form. The theory of Mr. Henrichs is, that all matter is composed of similar parts, which he calls "pan-atoms," and that the various properties of bodies are due to the various ways in which these atoms are combined to form molecules. A molecule of hydrogen is composed of two of these pan-atoms, one of carbon of twelve, and so of the other bodies. According to this view the chemical elements are not really simple bodies, but differ from other compounds only in the difficulty or impossibility of separating their parts. Professor Henrichs' papers were chiefly devoted to the relations between the atomic volumes, the boiling points and the molecular structure of the carbon compounds, especially the alcohols, and the corresponding organic acids. One of his most interesting results was that in the combination of carbon with other elements, the compound atoms would condense into a volume bearing some simple ratio to the elements.

The paper of Gorge F. Barker, of New-Haven, "on the molecular arrangements of the inorganic acids," had a similar object, and was presented with more logical clearness than that of Mr. Henrichs, but our space will not permit even an abstract.

### THE ANTIQUITY OF MAN.

This was the most exciting subject discussed by the association; provision was therefore made, on the first day, for the reading of papers relating to it in general session. The discussion was opened by Colonel Whittlesey of Ohio, who cited a number of cases of the discovery of the handiworks of ancient man. The following are some of the more remarkable:—

1. The discovery of flint arrows in Missouri beneath the skeleton of the mastodon, in the ancient alluvial formation, buried in a peat bed covered with sand to the depth of fourteen feet. He therefore inferred that man was contemporary with the mastodon, and survived the convulsion which destroyed the latter.

2. When the High Rock Spring at Saratoga was cleaned, under the cave there was found, at the depth of thirteen or fourteen feet, a log that appeared to have been used by persons who had occasion to reach the spring. It was computed that the time required for the deposit over the log was nearly 5000 years, and from the foot tracks, it would appear that the people were the common Indians.

He also alluded to the discovery, some years since, on the Florida reefs, of fossil human jaw with one tooth, which had been examined by Agassiz, and which from the position in which it was found, had been calculated to have been there 10,000 years, and to a number of other cases already made known to the public.

Mr. Foster of Chicago exhibited two specimens of the plastic art taken from mounds near the battle field of Belmont in Missouri. While it must be admitted that the founders of Acropolis are in no danger of losing the palm by the competition of these less noted artists, it is still true that the works of the latter are far beyond anything that could be expected of the present race of Indians. One of the specimens was a water pitcher, on which the potter had impressed the features of his race. These were radically different from those of the red man, and indicated a good degree of intellectual development. The other piece of art was a statuette of a captive. The arms were bound behind the body by cords, and the art of the fashioner was so far advanced that the countenance of the figure expressed the discomfort of his position.

J. D. Whitney and W. P. Blake presented evidence on the same subject from California. The subject of Mr. Whitney's paper was a fossil human skull found in Calaveras County, California, at the bottom of a shaft 130 feet deep. Above the layer of gravel in which it was found were four beds of lava, with three of gravel, interposed between them. Large portions of the skull were gone, rendering it impossible to identify the race of men to which it belonged with any certainty, but they appeared not to differ much from the present Esquimaux. From the manner in which the skull was fractured, Professor Whitney concluded that it was swept with many other bones down a shallow but violent stream, where it was exposed to the boulders of the bed. In its passage it was broken, and at last came to rest in a position where water charged with calcareous matter had access to it, on a base of auriferous gravel. From all the circumstances the speaker thought the owner of the skull lived before the glacial epoch, and that man had therefore seen and survived that great convulsion.

Mr. Blake presented some relics,—bones, flint arrow heads, etc.,—said to have been found beneath Table Mountain, California. Geological evidence shows that this mountain was once the bed of a river, which gradually filled up until the river overflowed and divided into two courses, one on each side of its original bed—In the course of ages the streams gradually wore away their new beds to the depth of from 1500 to 2000 feet, leaving the old bed as an intervening mountain of that height. If then the remains of man were really found in the interior of this mountain, the evidence in favor of their antiquity would be very strong. Unfortunately, however, Professor Whitney came forward with the damaging statement that the very authority from whom Dr. Blake had got his relics had informed him (Whitney) that they did not come from under Table Mountain at all. Dr. Blake retorted by attempting to discredit Whitney's skull, but his objections were neither so definite nor so conclusive as those of his opponent.

On the whole we conceive that although two mornings and most of another were given to this discussion, not much new light, was thrown upon the question.

### GEOLOGY AND PALEONTOLOGY.

Charles Whittlesey also presented an extended paper on the fossil horse, showing that although this animal was not an inhabitant of this continent at the time of its discovery, its bones were found in early geological formations.

T. Sterry Hunt of Canada read a paper on the chemico-geological relations of metals, the object of which was to show how auriferous and other veins resulted from the chemical properties of the metals while the earth was cooling from a red hot liquid mass to its present consistence.

### GENERAL REMARKS.

The meeting was one of the largest the association has yet brought together, and the amount of matter presented was very large, not half the papers being read.

The sessions of the Association were presided over with dignity and impartiality by Dr. B. A. Gould of Cambridge, Massachusetts, Professor Lovering as heretofore was permanent secretary, popular and acceptable to all. The affairs which appertained to the reception and entertainment of members, places of meeting, &c., were managed by a Local Committee, of which the Hon. J. Y. Scammon was Chairman and Dr. Wm. Stimpson Secretary. The president of the Association chosen to succeed Dr. Gould is Col. W. S. Foster of Chicago, and the annual meeting for 1869, is appointed to be held on the 18th of next August in the town of Salem, Massachusetts.

H. H. M.