behind, by smaller scuta, three in front, two at the side, and two behind. Commencing with the first, No. 1 has already been described. No. 2 is small, oval, and antero-posterior; No. 3 is an antero-posterior pentagon, with the narrowest side inwards. No. 4 is a similar transverse pentagon. No. 5 is an antero-posterior pentagon, which presents its shorter lateral facet inwards. No. 6 has a similar character, but is smaller and with more definite angles. Another series of scuta is seen outside of these at one end of the series. Three of this set bound the front and side of each of the median pair above mentioned, leaving a short facet next its fellow unaccounted for. The sculpture consists of radiating ridges and tubercles, which are most broken near the centres of the scuta. The tubercles and ridges are obtuse and low, and the latter do not inosculate. An angular depression commenced at the middle of each lateral area, and extends across the middle line at the point of junction of the paired and single median scuta.

	M.
Width of vertex at middle scuta	0.176
Length of single median scute	.048

June 30.

The President, Dr. Ruschenberger, in the chair.

Fifteen members present.

Permission having been granted (the meeting being for business), Prof. Persifor Frazer, Jr., made the following remarks:—

In the investigation of the chemical formulas of minerals, the student will meet with two kinds of difficulties. The first is the great variations in the analysis, and the next is the connecting together in the formula for the particular mineral of different compounds by the sign +. The first of these difficulties is a necessary consequence of the manner of formation and occurrence of minerals in the midst of solutions of other materials, and consequently subjected to mechanical and chemical conditions tending to add impurities to it, (whether by percolations through its open joints, crevices, and pores, or by oxidizing or partially decomposing it).

The first results of the best processes of mechanical separation merely reduce to a low per cent. the admixture of one mineral with another of greatly different sp. gr., and even the best known chemical methods can never succeed in producing an absolutely and theoretically pure substance. So much less probable is it that the deposits of compounds by the mechanical and chemical processes which a change of the conditions of the surrounding nature have caused, and which have not been bottled up in impervious glass jars, but left to the action of the rain and sun and subterranean solutions, should even acquire more than a relative purity. So that when we glance over the analysis of the same mineral made by different chemists, it is often hard to say which elements are those characteristic of the species. (*See Glauconite*, *Conarite*, *Beudantite*, *etc. etc.*)

In some cases, the admixture of the two minerals can be proved to be mechanical (*gold dust in magnetic sand*); in others it is merely strongly suspected, but the mineral cannot be separated by mechanical means (*gold in pyrites*, *etc.*), while in the great majority of cases the formula maker contents himself with two arrangements of the atoms present connected by the sign +, and each representing a different mineral.

It is this that forms one of the greatest difficulties to the student, at the present state of science, in forming any probable conception of the mutual chemical relations of the various elements represented. Such an hypothesis is certainly tenable in two cases: 1st. When the resulting mass cannot be classed under any of the crystal systems (*limonite*, *etc.*) and the mineral is set down as amorphous or crystalline; and 2d. Where the percentage of one or two of the supposed compounds is so small that the morphological properties of that which greatly preponderates are assumed by the whole mass. (*Quartz containing scales of specular iron or needles of rutilite.*) But when a mineral crystallizes distinctly in one crystal system and is deliberately assumed to be made up of two others, each crystallizing in a different one, the case is exceedingly perplexing to the mind. Yet the greater number of all the formulas determined by chemists exhibit this anomaly.

It was not surprising that this should be the case at a time when the electro-polar theory of Berzelius was unquestioned, and the bases and acids were placed opposite each other—frequently separated by the + sign—like the partners in a Virginia Reel, and it was thought necessary to make them analogous by dividing the oxygen between them. CaO, SO_3 (*anhydrite*) or CaO + SO_3 which has a crystal form differing from that of SO_3 and CaO seems to justify $(Ag_2S)_3$ + Sb_2S_3 (*proustite*), for in this latter case the mineral is rhombohedral (hexagonal) while one of its constituents crystallizes isometric and the other rhombic. It is true that this mineral belongs to the class of those of metallic habit, and is therefore opaque, and thus its optical properties cannot be determined, but if it were transparent we should be under the necessity of recognizing the power of a mineral which can only produce the ordinarily refracted ray + one that can produce two extraordinary rays to form a mineral which can give rise to one extraordinary ray, and so of pleochroism, etc. In this case the fancy is pleased by the accidental coincidence of the crystal form of the resultant with the average of the other two $\frac{0+2}{2}=1$; but we know there is no basis for such a thought, and besides in other cases the union of two simply crystallizing minerals produces one of more complex morphology.

Thus our authorities tell us that sternbergite which crystallizes orthorombic is to be written chemically $Ag_2S + (FeS)_3 + FeS_2$, or in other words, is composed of three minerals, two of which (*Ag_2S and FeS_2*) crystallize in the isometric system, and the third has no place in nature and no name.

I propose at a future meeting of the Academy to call the attention of the mineralogists to several formulas which, though new, seem to fulfil all the conditions of agreement with analysis and the newest developments of theoretical chemistry.

The following anatomical notes by Dr. CHAPMAN were read:—

Disposition of the Latissimus Dorsi, etc., in Ateles Geoffroyi (*Kuhl*) *and Macacus Rhesus* (*Desmarest*).—Frequently the attention of anatomists is called to the abnormal arrangement of parts, such as variations in the disposition of muscles, arteries, etc., and by comparison with other animals what is abnormal, variable, in a higher animal is usually found to be normal, constant, in a lower one. Supposing the theory of the evolution of life to be true, that the higher animals are the modified descendants of the lower, we have some explanation for the occurrence of such abnormalties, these variations being reversions to ancestral types. An interesting illustration of this view is seen in the occasional occurrence in man of a muscular slip, running from the latissimus dorsi to the internal condyle of the humerus. This muscle, which is of very rare occurrence in the human subject, is constant in monkeys, among others in the spider monkey or Ateles, as shown in Plate 13, Fig. 1 (*b*). Another variation met with so frequently in the human subject that surgeons have their attention called to it with reference to the ligation of the main arteries, is the presence of a muscular slip, passing from the latissimus dorsi across the axillary artery and nerves to the pectoralis major. This muscle, Plate 13, Fig. 2 (*c*), is constant in the Macacus, which also exhibits the muscular slip (*b*), just referred to in Ateles. On the supposition that man and the monkeys are the descendants of a common stock, we may expect to find such variations recurring like other family traits.

Flexor Brevis Digitorum in Ateles Geoffroyi (*Rube*).—I take the opportunity of calling attention to the arrangement of the flexor brevis digitorum in a spider monkey, the Ateles Geoffroyi. By looking at Plate 14, we see that tendons 1 and 2 are the continuation of the muscular belly rising from the calcaneum, that tendon 3 results from the union of two muscular slips, one from (*a*), the other from the tendinous portion of the flexor longus digitorum, while tendon 4 comes only from tendon of flexor longus digitorum. This arrangement of the tendon of the flexor brevis digitorum is somewhat different from that observed in other New World monkeys (Platyrrhini and Arctoppithecini) or those of the Old World (Catarrhini).

Rete Mirabile in Bradypus Didactylus.—Of the many peculiarities in the organizations of the sloths, one of the most interesting is the breaking up of the arteries into rete mirabile. This is well seen in the upper extremity of a two-toed sloth (*Bradypus Didactylus*) which recently died at the Zoological Garden, Philadelphia. While the axillary artery is seen to continue its course as the brachial, diminished, however, in its calibre, it gives off numerous branches which divide and subdivide. The main artery with the surrounding plexus and the median nerve passes through the internal condyle of the humerus, Plate 13, Fig. 3. In this latter respect it differs from the three-toed sloth, as may be seen by comparison with the beautiful plates of Prof. Hyrtl. This interesting disposition of the bloodvessels is also seen in the femoral arteries of these animals. Various explanations have been offered for the rete mirabile of arteries. Thus in the Cetacea the dividing and subdividing of the arteries appear to serve as reservoirs of arterialized blood, enabling such animals as the porpoise, etc., to remain for a long time under water. In the sloths and slow lemurs this disposition of the bloodvessels seems to be in relation with the slowness of the circulation, fluids travelling less rapidly through a number of small vessels than one large one.

On report of the Committee to which it was referred, the following paper was ordered to be published:—