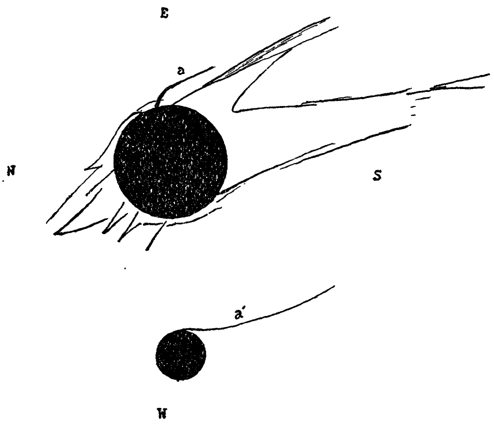
I send you an observation apparently indicating such a change in certain features. The phenomenon was observed independently by three members of the party with which I was connected.



The accompanying sketch is an outline of the corona drawn by Mrs. Clayton during totality at Wadesboro, N. C., on May 28, 1900. At the beginning of totality the polar streamer marked *a* in this sketch appeared convex toward the zenith but rapidly flattened and toward the end of totality appeared flat or concave toward the zenith as represented by *a′* in the smaller sketch. There appeared to be other changes taking place in the corona but these I thought might be explained by more detail becoming apparent as the eye became accustomed to the darkness.

H. HELM CLAYTON.
BLUE HILL METEOROLOGICAL OBSERVATORY,
July 4, 1900.

NOTES ON INORGANIC CHEMISTRY.

IN the March number of *Leopoldina*, which is published at Leipzig and is the official organ of the Kaiserlichen Leopoldinisch-Carolinischen deutschen Akademie der Naturforscher, appeared an article by Professor F. Fittica of Marburg, in which he claims by heating amorphous phosphorus to 200° or lower with ammonium nitrate, to have converted the phosphorus partially into arsenic. He even assigns to arsenic the formula PN_2O and writes the equation for the reaction

$$2P + 5NH_4.NO_3 = (PN_2O)_2O_3 + 10\ H_2O + 3N_2.$$

Apparently from the relative obscurity of the journal in which the paper was published, these remarkable claims seem to have attracted little notice till quite recently, but in the last *Berichte* Professor Clemens Winkler of Freiberg takes up the subject and shows that Fittica's conclusions rest upon an '*ungeheueren Irrthum.*' Most phosphorus contains more or less arsenic—up to 2.64 %—derived from the sulfuric acid used in its manufacture. That Fittica claims to have converted eight to ten per cent. of phosphorus into arsenic Winkler considers merely an estimate. To prove the matter positively Winkler took a specimen of carefully washed and dried amorphous phosphorus and oxidized it in two gram portions with (1) ammonium nitrate, with (2) dilute nitric acid, with (3) chlorin, and with (4) alkaline hydrogen peroxid. The percentages of arsenic found in the phosphorus were as follows:

(1) Oxidation with ammonium nitrate (Fittica's method)	1.910 %
(2) Oxidation with nitric acid	1.925 %
(3) " " chlorin	1.920 %
(4) " " hydrogen peroxid	1.920 %

This shows conclusively that all the arsenic obtained by the oxidation of phosphorus by ammonium nitrate was originally present in the phosphorus.

The closing paragraph of Dr. Winkler's paper is worth quoting entire:* "It must be admitted that this occurrence, the consideration of which I have most unwillingly undertaken, has a very grave background. It almost seems as if of late in the pursuit of inorganic chemistry, there is present a dangerous tendency to enter upon speculations, without paying any attention to that thoroughness which has heretofore characterized German research. For the cases multiply where it is apparent that the theory has been first formed, and then the effort made to find the facts one wishes to find, or where one starts out from what the Leipzig physiologist Czermak calls 'inaccurately observed facts,' and hence soon falls into error. The reason for this is to no small degree to be found in the fact that the art of analysis has suffered an unfortunate retrogression. I use the word *art* intentionally, for between analysis and analysis

Ber. d. deutsch. chem. Gesell. **33**: 1696 (1900).

may be a difference as great as that between the work of the sculptor and of the stonemason. Analytical skill is not to be expected of the physicist, whose field of research with the development of electrolysis begins to encroach more and more upon the domain of inorganic chemistry; but even without this he can make great attainments in his own province. But physical chemistry is by no means identical with inorganic chemistry; for inorganic chemistry, so far from being a secluded science, presents an unlimited number of problems, whose solution must be sought along quite other lines than those indicated by the theory of ions. The really successful carrying out of inorganic chemical research is only possible for the man who is not merely a theoretical chemist but also an expert analyst, not only a practically trained, mechanical workman, but a thoughtful educated artist; the theory of every operation he carries out must be very clearly in his mind, stoichiometry must be transformed for him into living flesh and blood, and in all that he does, he must be inspired by an esthetic spirit, by a sense of order and neatness, and above all by a desire for the truth."

J. L. H.

NOTES ON OCEANOGRAPHY.

THE NOMENCLATURE OF SUBMARINE RELIEF.

AT the Berlin International Geographical Congress a committee was appointed to discuss methods of naming the forms of submarine relief. That some common system should be adopted is plain, yet a vigorous paper by Dr. A. Supan sustains the thesis that the existing nomenclature is both insufficient and ill-advised. He proposes an almost wholly new scheme intended to remedy these shortcomings (*Petermann's Geog. Mittheilungen*, vol. 45, p. 177, 1899, with map). In several important respects his system stands in contrast with the usage which has gradually grown up and has crystallized in the maps published by Sir John Murray in the Summary Report of the *Challenger* Expedition and in Murray's supplementary chart recently printed in the *Geographical Journal* (Vol. XIV., p. 426, 1899).

The depressions are, by Murray, in the main generically differentiated and named on a purely bathymetric basis, forty-three of them over three thousand fathoms in depth being called 'deeps,' and each of fourteen shallower depressions receiving the name 'basin.' Supan objects to this method and emphasizes the expedience of so naming these forms that their orographic relationships may appear. Thus his 'Atakama-Graben' is so distinct an orographic unit that it does not seem well to refer to this great trench only under the names of the five 'deeps' which Murray has mapped off the coast of Chili. Throwing out the term 'deep' entirely, Supan has used 'Becken' (basin), 'Graben' (trough), 'Mulde' and 'Bucht' (for which satisfactory translations into English are desired). These are intended to describe all the types of depression yet discovered outside of the continental shelf. They are distinguished by form, not by absolute depth. The principle is a good one; yet it does not follow that the bathymetric element in our charts should be entirely restricted to what the isobaths tell us. Murray's 'deeps' are far too interesting and important not to deserve special names, and his system might well be combined with that of Supan. We think it would be to their mutual benefit.

The chief difference in the naming of elevations appears in Supan's 'Schwelle' (Swell) for Murray's 'Plateau'; the German term certainly seems the more fitting.

But a still greater contrast between the two systems subsists in the names given to individual elevations and depressions. Here again it is a matter of the principle involved. Murray has watched the growth of the older nomenclature, and, with the traditon of the naturalist in his support, has given preference to names having the priority. These names were given at various times and but slowly. Exploring vessels, commanders and naturalists were commonly honored in the application of their names to the newly discovered basins, deeps, ridges and plateaus. Supan properly dwells upon the fact that these names give no clue to the location of the corresponding forms. He, on the other hand, employs the one principle of giving submarine forms names which will relate them at once to well-known parts of the continents or to the grand ocean basins. His 'Fidschi-