The following case is reported as adding another to the evidence that jaborandi will produce the effect mentioned under favorable circumstances. Mrs. L., aged seventy-two years, was suffering from Bright's disease (contracted kidney). Her hair and eyebrows have been snow-white for twenty years. She suffered greatly from itching of the skin, due to the uræmia of the kidney-disease; skin harsh and dry. For this symptom fluid extract of jaborandi was prescribed, with the effect of relieving the itching. It was taken in doses of twenty or thirty drops several times a day, from October, 1886, to February, 1888. During the fall of 1887, it was noticed by the nurse that the eyebrows were growing darker, and that the hair of the head was darker in patches. These patches and the eyebrows continued to become darker, until at the time of her death they were quite black, the black tufts on the head presenting a very curious appearance among the silver-white hair surrounding them.

At the time the first of these cases was reported, the facts as stated were received with considerable incredulity, the editor of one well-known Western medical journal openly refusing them credit. Others preferred the charge that the lady had formerly bleached her hair, and that when this was no longer possible her hair returned to its original color. In reply to these "suggestions," I will only say that the facts are known to scores of people at her home in Washington, D.C., and are entirely beyond question.

As illustrating the ubiquity of the daily press, and the ease with which all sorts of nostrums, valueless or otherwise, may be brought into notice through the newspapers, and how easy it is to make such a matter profitable to the advertiser, I mention an incident in connection with the case just reported.

It seems that some enterprising newspaper-man became cognizant of the case, and put a short notice in a New York daily paper to the effect that a drug had been discovered that would turn white hair black, and make hair grow on bald heads, giving my name as being connected with the Smithsonian Institution. This paragraph must have been extensively copied in newspapers both throughout this country and abroad. The first intimation I had of its existence was an avalanche of letters from all parts of the country wanting information, some offering money for the receipt, others enclosing money in advance; which latter, be it known, I at once returned. One from London, England, enclosed the half of a two-dollar bill, with the information that the other half would be speedily forthcoming on receipt of the formula or medicine.

These are the only cases thus far reported in which pilocarpin has been supposed to change the color of the hair.

In 1879 Dr. G. Schmitz[1] of Cologne reported two cases in which pilocarpin stimulated the growth of the hair in alopecia. One patient, aged sixty, was completely bald. Pilocarpin was injected subcutaneously for disease of the eye. After three injections, within a fortnight the head became covered with a thick down, which grew rapidly, so that in four months no trace of the baldness was left. No mention is made of the color. In the second case the patient, aged thirty-four, had a bald patch on top of the head the size of a playing-card. There was total restoration of the hair after two injections, in a short time.

[1] Berliner Klinische Wochenschrift, No. 4, 1879; Medical Bulletin, Philadelphia, 1882.

Schöller[1] tells of similar results in animals in which alopecia had been produced by injections of bacteria.

Oscar Simon[2] relates the case of a woman, aged thirty, who had general baldness,—head, eyebrows, eyelashes. In a few weeks, after twenty injections of pilocarpin, the hair of the whole body was restored. In other cases so treated there was no effect whatever.

Landesberg[3] of Philadelphia says that in more than a hundred cases of eye-disease treated by pilocarpin he observed no effect whatever upon the growth of the hair. The dose and mode of administration are not mentioned.

In 1882 Julius Pohlman[4] experimented on white rabbits by hypodermic injections of pilocarpin. The dose used was large,—one grain three times a day. No change in color was noted in pure white rabbits. In party-colored animals, white and brown, in one a brown spot on the back of the head deepened, and spread to a remarkable degree down the back and sides of the animal to the legs. In other individuals no change was noticed. Post-mortems in these animals showed enlarged spleen and altered suprarenal capsules.

D. W. PRENTISS.

POISONING BY MUSSELS.

IN the *Lancet*, July 26, 1890, Sir Charles A. Cameron of Dublin says, "On June 30, Mrs. O'Connor, her five young children, and her maid-servant, residing at Seapoint, County Dublin, partook of a meal of stewed mussels. In about twenty minutes after the ingestion of the mussels, some of the children stated that they felt a prickly ('pins-and-needles') pain in their hands. Graver symptoms rapidly supervened, and in less than an hour one of the children died, the mother and three other children succumbing within two hours after eating the mussels. The chief symptoms were vomiting, dyspnœa, swelling of the face, want of co-ordination in movement, and spasms, principally in the arms. The patients appeared to have died asphyxiated, their faces being intensely livid. One of the children and the maid (the latter had eaten but few of the mussels) suffered very much, but recovered. Medical assistance came rather late, and was not of much use. The mussels had been procured from a small sheet of water to which the sea had access, but which received fresh water and some sewage. Examinations of the water at low and high tides showed that its saltness was twice as great when the tide was in,—a proof that land water drained into it when the tide was out. This land drainage would necessarily, from local conditions, be impure.

"It was deemed necessary for judicial purposes, that the cooked mussels, and the matters vomited by the patients, should be examined for ordinary poisons. This was done, with negative results. The uncooked mussels, compared with mussels of the same size from the open sea, appeared to have much larger livers, and their shells were very brittle. An attempt to extract an alkaloid was made. The generic tests applied, clearly proved the existence of a leucomaine, which, indeed, was obtained in crystals visible under the microscope, and corresponded to those described by Brieger as existing in the poisonous mussels which he examined. The quantity of material available did not, however, yield a sufficient quantity of the leucomaine for a thorough examination. I have procured a supply of mussels from the pond in which the poisonous mussels were found, and hope to be able to extract from them a substantial quantity of the leucomaine, which will probably be found identical with Brieger's mytilotoxine ($C_6H_{15}NO_2$). The mussels are mixed with mud having an offensive odor.

"The Seapoint case is another instance of poisonous mussels be-

[1] Klebs's Archiv, 1879.
[2] Berliner Klinische Wochenschrift, 1879.
[3] Medical Bulletin, Philadelphia, 1882.
[4] Buffalo Medical and Surgical Journal, 1882, p. 441.

ing procured from foul or stagnant water. In this case the opinion of M. Dutertre, that the liver of poisonous mussels is the seat of disease and the generator of the poisonous leucomaine, seems confirmed; but I cannot agree with the French observer, that the disease is never the result of the poisonous nature of the food of the mussel. I have read all, or nearly all, the cases of mussel-poisoning on record, and I gather from such details as are given with respect to the places in which the mussels were found that they were in contact with sewage or stagnant water."

RECENT THEORIES OF GEOMETRICAL ISOMERISM.[1]

THE histologist places a section of organized tissue upon the stage of his microscope, and studies its structure. He reports upon the cells and their contents, for he has seen them, but he has not detected the molecule. The smallest discernible particle was probably an aggregate of at least a million molecules of elaborate structure, permeated by many times as many molecules of simpler composition.

The actual configuration of atoms in the molecule, the bonds by which they are united, the mechanism which effects transformations from one form to another, and, indeed, the very existence of molecules, are subjects which do not belong to the world of sight. It is not likely that any human eye, with the most perfect optical instruments, will ever penetrate these secrets of an unseen world.

But the many unseen worlds are favorite hunting-grounds of science. The imagination of the geologist sees successive strata in regular order or thrown into folds, where the rocks are hidden from the uninitiated by drift, soil, and forest, or even where they were long since removed by erosion. The astronomer, having discovered a simple law controlling the motions of the planets, pursues them with the formulas of dynamics and perturbations, until the unexplained residuals of motion lead him to the very spot occupied by Neptune. The biologist experiments upon the vitality of invisible germs, but the chemist reasons upon the elements that make up molecules of which these germs consist. He recognizes atoms having simple, double, triple, and quadruple power of union. Whatever be the nature of this union, the "bonds" are as real as ever held prisoner to Roman soldier. The structural formulas which characterize the language of modern chemistry express the fact that each atom is specially related to a certain one or more other atoms, with scarcely the least claim in regard to distance or direction.

The doctrine of valence and types prepared the way for the more elaborate doctrines embodied in structural formulas, which so admirably explain numerous re-actions and isomers. Such is our ignorance of the actual relations of the atoms in space, that no photographs of geometrical isomers can be offered for inspection; yet certain working hypotheses of their configuration, which were received for some years with great reserve, have recently had such influence in shaping the current of research in organic chemistry, that they are well worth our attention at this hour.

When the quadrivalent character of carbon was distinctly recognized, as in CH_4, it was probably not long before the regular tetrahedron often occurred to thinking minds as a suitable representation. If CH_4 thus represents the outline of a regular tetrahedron, it must not be supposed that the actual form is changeless, but rather that the mean positions of the hydrogen atoms are at the angles. In substitution products, we may think of the several radicles oscillating about mean positions that are at unequal distances from each other, the mutual attraction of the most unlike groups bringing them somewhat towards each other. The conditions in the two forms (see below) are so far identical that the mean mutual distance of any pair of groups will be the same in both. The difference would not be likely to make one form more easily soluble or volatile than the other. The usual means of distinguishing isomers may fail. Ordinary methods of fractional distillation or precipitation are alike useless to distinguish tweedledum and tweedledee. A most delicate instrument, capable of feeling the slightest resistance to the vibrations of luminiferous ether, is found in a ray of polarized light. When such a ray passes through the asymmetric molecule, it is probable that greater resistance will be met in some one plane than in another, and thus the plane of polarization is slightly turned. In a fluid aggregate, a ray will meet successive molecules in all possible positions; and while these must have unequal effects,—sometimes, perhaps, in opposite directions,—the mean result for a large number will always be the same.

Le Bel and van't Hoff were the first to state clearly (and independently) the fundamental principles upon which this branch of chemical investigation has been developed. In the first place, when carbon is linked with four different radicles, two isomers will usually result, the forms of the molecule being related to each other as an object to its image in a plane mirror. These isomers closely resemble each other in most physical and chemical properties. Two such atoms may be represented by tetrahedrons, united at the corners, where it is important to note the cyclical order of the radicles attached to each carbon atom as seen from that atom itself.

Our theory must conform, however, to the observed facts; otherwise we may either be overwhelmed with a multitude of imaginary isomers, or we may be unable to account for all that are discovered. The following principle (which has been known as "van't Hoff's second hypothesis") is supported by many facts: When two atoms of carbon are united by a single bond, each is capable of free rotation in either direction about the common axis; and isomers may be recognized for those bodies only which cannot be brought into the same configuration by such rotation. But some apparent exceptions must not be ignored, especially a marked exception to the principle of free rotation, announced two years ago by Auwers and V. Meyer.

Again, using the tetrahedron as the symbol of the carbon atom, we may conceive two such forms united on a common edge, with hydrogen at the four free corners, to represent the molecule of ethylene (C_2H_4). In like manner, acetylene derivatives may be represented by two tetrahedrons with a common face.

Finally the theory of rings was discussed. A campaign is thus being conducted towards the stronghold of atomic mysteries.

The current theories of stereochemistry or geometrical isomerism are based upon those residuals of observed facts that find no explanation in the usual doctrine of structural formulas. Any complete bibliography, covering all the experimental evidence that may bear upon this subject, must therefore include all reactions or properties that aid us in determining the constitution of the many compounds capable of appearing in geometrical isomers. In the list appended to Professor Warder's paper an attempt is made to include those papers only that may be most useful to chemists or physicists desiring to acquaint themselves with the history of the stereochemical conception, its originators, supporters, and opposers. The full value of Professor Warder's paper cannot be appreciated without the use of the many diagrams which are not available for our use.

[1] Abstract of an address before the American Association for the Advancement of Science, by Robert B. Warder, vice-president of Section C.

NOTES AND NEWS.

THE pressure of natural-gas wells in Indiana and Ohio is steadily diminishing, the diminution having already amounted to between 30 and 40 per cent. Professor Orton urges the imperative necessity of cities and States taking action to restrict wasteful use of gas; but even the strictest regulations, he says, cannot prevent the exhaustion of the supply in a few years. In this connection, says the *Engineering and Mining Journal*, it is interesting to note that the Pennsylvania Company has taken the step of refusing to sell natural gas in Erie, Penn., except by metre, charging 22½ cents per 1,000 cubic feet, in order to prevent waste of the gas. No factories are to be furnished at any point on its line, as all the gas will be used for domestic purposes.

—The American Folk-Lore Society will hold its annual meeting in New York City on Nov. 28 and 29, these dates being the Friday and Saturday following Thanksgiving Day. The sessions will be held at Columbia College, in rooms kindly placed at the disposition of the society by President Low. Last year the annual