Notes and Queries.

[1.] I am studying the character and extent of a substance called "Tuckahoe, or Indian Bread," for its Ethnological interest. I find that my knowledge of Botany is not sufficient, and desire reliable information upon the following points:

What is the nature of its growth and production?
What is its geographical distribution?
Its former use and preparation?
In what kind of soil is it found?
What authors have mentioned it?
By what botanical names is it known?
Has it any medicinal properties?

J. H. G.

GENERAL NOTES.

FORMATION OF VINEGAR BY BACTERIA.—E. Wurm has investigated this matter, and his results prove, without doubt, that an active formation of vinegar from alcohol is obtained by means of Myccderma aceti (Bacterium mycoderma—Cohn), thus supporting Pasteur's view.

ORGANISMS IN BEET SAP.—The bodies known as "frog-spawn," which make their appearance after a time in the sap of the beet root, prove, on microscopic examination to be a species of bacterium, called by L. Cienkowski, Ascoccus Bilrothü.

PTYALIN AND DIASTASE.—T. Defresne has found that ptyalin converts starch into sugar, in the presence of impure gastric juice, as rapidly as it does in the mouth. Its action is, however, suspended by pure gastric juice; but on passing into the duodenum the ptyalin again becomes active. Diastase, on the other hand, is completely deprived of its power of converting starch into sugar by hydrochloric acid or by pure gastric juice. (Compt. Rend., 89, 1070.)

ABNORMAL COMPOSITION OF MILK.—According to C. Marchaud (Bied. Centr., 1872, pp, 769–770), the usual composition of human milk is as follows: butter, 36.8; lactose, 71.1; proteïn, 17; salts, 2.04, and water, 873 parts per thousand. When the amount of butter rises to above 52 parts, the milk is injurious to the child. The quantity of proteïn, which is much less than in cow's milk, cannot be exceeded without ill effects.

NUTRITIVE VALUE OF GRASS AT VARIOUS STAGES OF GROWTH.—E. von Wolff and others (Bied. Centr., 1879, pp. 736–744) cut grass three times in the early summer, in the years 1874 and 1877; the first cutting took place about the middle of May, the second at the beginning and the third at the end of June. The second cutting appeared to give the best results in the case of animals experimented upon, namely sheep and horses; and, as a rule, it was found that more nitrogenous matter was excreted by the latter than by the former.

ANALYSIS OF TWO ANCIENT SAMPLES OF BUTTER.—G. W. Wigner and A. Church have examined a sample of Irish bog butter, which cannot be traced with any certainty to a particular locality. There is no doubt, however, that it is a perfectly authentic specimen, probably 1000 years old. The following results were obtained: volatile fatty acids, calculated as butyric, 6 per cent; soluble fatty acids, not volatile, 42 per cent; insoluble fixed fatty acids, 99.48 per cent; glycerol, minute traces. The insoluble fatty acids contained 9 per cent. oleic acid, and 91.0 per cent stearic and palmitic acids.

The other sample of butter, which is much older, was taken some time ago from an Egyptian tomb. It dates from about 400 or 600 years before Christ. It was contained in a small alabaster vase, and had apparently been poured in while in a melting state. In appearance, color, smell and taste, it corresponds closely with a sample of slightly rancid butter. Analysis shows that the sample has not undergone any notable decomposition.

CHLORIDE OF PLATINUM.—Dissolve the metal in hydrochloric acid, 5 parts; and nitric acid 3 parts—a florcnce flask is convenient for this purpose. When all the metal is dissolved transfer the solution to a porcelain evaporating dish, and apply heat until nearly the whole of the acid is expelled. Dissolved in water or in ether chloride of platinum is useful for imparting to brass articles a steel like appearance.

THE EFFECT OF CARBONIC ACID IN THE AIR UPON CROPS.—According to M. Marie-Davy, (Compt. rend. 90, pp. 32-35), an examination of the determinations of the amount of carbonic anhydride in the air, which have been made daily during the last four years at Montsouris, seems to show that the best crops have been produced in those years when the amount of carbonic anhydride has been below the average. The carbonic anhydride varies inversely with clearness of the sky, and is influenced by the oscillations of the great equatorial atmospheric currents.

RESPIRATIVE POWER OF MARSH AND WATER PLANTS.—It is a well-known fact that these plants are able to thrive in media which contain little or no oxygen. They are all very poor in nitrogen, and E. Freyberg has shown by a number of experiments, that this latter property accounts for the former. His investigations prove that the respirative power of plants varies with the amount of nitrogen they consume, and this, taken in conjunction with the fact that water-plants contain large air chambers which do not often need refilling, accounts for their being able to exist in media which contain very little oxygen.

A RAILWAY BREAK, which is instantaneously applied and continuous in its action, and which the inventor proposes to render automatic, is described by M. Hospitalier in *La Nature*. It is worked by means of two of the secondary batteries of M. Planté, each of these being charged by three Daniell cells. The action of the apparatus is dependent upon the adhesion of an electro-magnet to the axle of the wheels, by means of which two chains attached to levers carrying friction blocks, are wound upon a drum.

ARTIFICIAL DIAMONDS.—In regard to the successful work of Mr. Hannay, of Glasgow, in producing perfect artificial diamonds, it may be well to bear in mind the similar investigation carried on by Despretz, the noted French chemist. Some authorities allege that the results obtained by Despretz were in advance of those reached by Mr. Hannay, yet the former, at the conclusion of five years of labor, made the frank acknowledgment that he had not found the diamond proper, although he had obtained crystals of pure carbon possessing all the characteristics of the coveted prize.

CYANIDE OF POTASSIUM.—There are many substances which are difficult to procure, whereas the materials of which they arecomposed are within the reach of everybody. To make Cyanide of Potassium, use the following formula:

Yellow prussiate of potash	8 parts.
Carbonate of potash	4 parts.

Reduce the prussiate of potash to a coarse powder, and dry upon an open plate over a slow fire; next dry the carbonate of potash thoroughly, when both substances are to be intimately mixed. Put the mixture in a crucible or deep iron ladle, and place in a clear burnt coke fire. When fusion takes place, stir occasionally with an iron rod. When the mass is thoroughly fused allow it to continue in that state for at least a quarter of an hour. If on dipping the iron rod into the melted mass the compound appears *white* on cooling, the ladle may be withdrawn from the fire, allowed to rest for a few minutes, when the cyanide which is formed, must be poured in patches on an iron slab or flagstone, care being taken not to allow the dross, which is chiefly iron, to pass out with the clear fused cyanide. The "dross" should be shaken out separately, and when cold washed with water to dissolve out the adherent cyanide, after which the washing water may be filtered and used as a solution of cyanide when required. Keep the cyanide in a wide mouth bottle well corked, and labelled.