said that it would be quite gratuitous on his part. This offer was received with warm approval by the meeting, and on motion of Mr. Elliot, the sum of $75 was placed at the disposal of the Lecture Committee, to defray any necessary expenses, as books, apparatus and prizes, for the class, in adopting which, many members spoke in favourable terms of the ability of Mr. S. to conduct such a class successfully.

Meeting adjourned.

HENRY J. ROSE, Secretary.

NOTE ON THE BLEACHING OF ALMOND OIL FOR USE IN TOILET PREPARATIONS.

BY E. B. SHUTTLEWORTH.

Two varieties of oil of sweet almonds occur in commerce; one colorless, which is expressed from the almonds deprived of their cuticle; the other, and by far most common variety, is of a yellow color, more or less deep, which is derived from the brown skin of the almond.

As cold cream, and other toilet preparations are frequently prepared by the druggist, and as it is indispensable that these articles should be perfectly colorless, the bleaching of the oil becomes a matter of necessity. This has generally been effected by agitation with fuller's earth, and exposure to direct sunlight. As the method is very tedious, a readier process was sought by the writer. All the ordinary bleaching mixtures were tried, including that of Engelhardt, (*Polytech. Jour. v. Dingler*), viz., potassium bichromate and chlorhydric acid; the general result was decomposition of the oil. Filtration through animal charcoal removed a great part of the color, and may be used where perfect bleaching is not required. The best results were obtained with potassium permanganate, although when a strong solution is used the oil is attacked and a mixture formed very slow of separation, and colored brown from the deposition of oxide. A dilute solution—1 part of the salt to 9600 parts water—will be found best. The following process is suggested:—Dissolve 1 grain of permanganate in 20 ounces of cold water; agitate with an equal bulk of the oil; separate by means of a funnel, and wash with water. If the color is not entirely removed, repeat the process with fresh solution. Filter through paper, if necessary.

Progress of Modern Chemistry.

We extract the following from the address of the President of the British Association to the Chemical Section, as embodying an account of the principal changes which chemical philosophy has undergone during the past ten years:

It is always an excellent recommendation to a theory or hypothesis when, amongst the cultivators of the science to which it pertains, very little difference of opinion exists as regards its admissability and scientific value. This is, in a high degree, the case with regard to the atomic theory. The vast majority of chemists, I believe, accept this theory as the most suitable exponent of the fundamental truths of their science, and certainly, if the quality of the tree may be judged by its fruit, there is no other view which furnishes a clearer image to our minds of the chemical constitution of bodies, and, at the same time, conducts to the discovery of so many important facts and relations. By Dalton's profound hypothesis, all bodies are supposed to be composed of atoms of infinitely small dimensions. But these atoms are supposed not to be single; two or more of them are held together by certain forces, and thus constitute what is called a molecule. One atom of carbon, one atom of calcium, and three atoms of oxygen, joined together by the force called chemical affinity, constitute a molecule of carbonate of lime. Vast numbers of such molecules, bound to each other by the force of cohesion, form a visible piece of chalk. If a chemist wishes to examine a body, his first endeavor is to ascertain of what sort of atoms the body is formed. This is a mere matter of experiment. He next determines how many of such atoms are contained in each molecule of the body, and, finally, he ascertains how these atoms are arranged, or, more correctly, combined within the molecule; for it is quite clear that a substance like saltpetre, which contains one atom of nitrogen, one of potassium, and three of oxygen, may have these atoms arranged in very different manners, and still have the same composition. We might assume the potassium and nitrogen in more intimate union, nearer to each other than they are to oxygen, or we might consider nitrogen and oxygen more closely packed together, and, so to speak, attached as a whole to the potassium; in both cases, saltpetre would have in each molecule the same number of atoms, and the weight of the molecule would be the same. The three determinations just mentioned are of fundamental importance to the chemist; not that such inquiries are the only ones which interest him, for we shall, in the sequel, notice others of almost equal importance.

Nor must it be supposed that questions of this nature are of quite a modern date; for Leucippus, 500 B.C., appears to have sought to explain the nature of things, by the assumption that they are formed by the union of small particles, which latter received the name of atoms from Epicurus. It is true the notion of atoms, as conceived by the Grecian philosophers, is not quite the same as ours, but their speculations contain our notions pretty much in the same way as the acorn contains the oak tree.

The determination of the quality of the atoms in a molecule, or the analysis of the latter, has not undergone any changes during the last few years; and the same may be said about finding of the relative weight of a molecule, or the determination of the number of atoms which are contained in it. With regard to the latter point, however, it may be mentioned that Avogadro's hypothesis, according to which equal volumes of gaseous substances, measured at the same temperature and pressure, contain the same number of molecules, guides us chiefly in assigning to each molecule its relative weight and its number of atoms. This hypothesis has won more and more the confidence of chemists, and it is now admitted to hold good in nearly all well-examined cases.

Our views relative to the combinations of atoms in molecules, and our methods of ascertaining this arrangement have, however, undergone great alterations, and received great additions during the last ten or fifteen years. To a considerable of these changes I will now, for a short time, invite your attention. Since our modern views, however, originated, in a great measure, from the study of organic bodies, and since the majority of chemists now devote their time and labor thereto, I shall confine my remarks principally to the organic branch of the subject.

Eighteen years ago, Prof. Williamson read before the members of this Association a remarkable paper, which contained the germ of our modern chemical views, and was the cause of many discoveries. He proposed to regard three large classes of bodies, acids, bases and salts, from the same point of view, and to compare their chemical properties with those of one single elected substance. For this term of comparison he chose water. Now water is composed of three atoms—two of hydrogen and one of oxygen. Williamson showed that all oxygen acids—all oxygen bases, and the salts resulting from a combination of the two—can, like water, be considered to be composed of three parts, or radicals, two of the radicals playing the part of the hydrogen atoms in water, and the third that of the atom of oxygen, thus:

$$\left.\begin{matrix}H\\H\end{matrix}\right\}O \qquad \left.\begin{matrix}K\\H\end{matrix}\right\}O \qquad \left.\begin{matrix}NO\\H\end{matrix}\right\}O \qquad \left.\begin{matrix}NO\\K\end{matrix}\right\}O$$

Water. Potassic hydrate. Hydric nitrite. Potassic nitrite.

Potassic hydrate is water which has one of its atoms of hydrogen replaced by an atom of potassium; hydric nitrite is water which has one atom of hydrogen replaced by nitric oxide; and potassic nitrite is water with one of its hydrogen atoms replaced by nitric oxide, and the other by potassium. This speculation, as every chemist knows, is well supported by experiments; it embraces three large classes of bodies which, till then, had been considered as distinct. M. Gerhardt, in 1853, extended Williamson's views, by distinguishing two other types of molecular structure, represented, respectively, by hydrogen and ammonia, and succeeded, by help of the radical theory, in arranging the majority of the then known substances under one or the other of the three types already mentioned.

Like every theory which is in harmony with experience, the above considerations led to results of unexpected importance; for it soon became apparent that the radicals which thus replace hydrogen in water are not all of the same chemical value. If we place together the formulæ of hydric nitrite and carbonic acid—

$$\left.\begin{matrix}NO\\H\end{matrix}\right\}O \qquad CO\}O$$

Hydric nitrite. Carbonic acid.

we perceive at once, that the atomic group NO has replaced one atom of hydrogen in one molecule of water, and carbonic oxide, CO, two atoms of hydrogen in one molecule of water. Nitric oxide (NO) is, therefore, said to be equivalent to one atom of hydrogen. The radical of phosphoric acid (PO) is found to be equivalent to three atoms of hydrogen. Professor Odling was one of the