Prof. MILLER, in thanking the author for his valuable researches, made some remarks on the interesting results that the investigation had brought to light, and drew especial attention to the remarkable fact stated in the paper, that the blue rays retarded the action of germination at first, although they probably accelerated the growth of the plant afterwards,—the act of germination being attended with the absorption of oxygen, but the process of developement being, on the contrary, attended with the extrication of this gas.—Prof. ANDERSON remarked that a similar difference in the rate of growth of the leguminous plants and grasses to that described by Mr. Gladstone had been observed when they were manured with the same material. Nitrate of soda, which was found to be an excellent fertilizer for grasses, had comparitively little influence upon leguminous plants.

On the Physiological Properties of some of the Compounds of the Organic Radicals—Methyl, Ethyl, and Amyl, by Dr. JAMES TURNBULL.

The author commenced by saying, that considering the vast number of new compounds discovered of late years, it was surprising that so few of real value should have been added by medical men to their stores of remedies. The progress of therapeutics, though disproportionately slow when compared with the advance of organic chemistry, was marked in our day by the discovery of a new and most valuable class of agents—the anæsthetics. The effect of this narcotic and the antiperiodic alkaloids, morphia and quinine, were well understood, but nothing was known of any relation that may exist between their chemical constitution and the different actions they exert on the animal economy. It is probable that an examination of the action of the artificial alkaloids upon the system would throw some light on this subject. Already one of them, Furfurine, has been found by Dr. Simpson to possess antiperiodic properties like quinine. The physiological properties of the pure hydro-carbons were then alluded to: several of them were stated to act as local and general stimulants, and some of the volatile ones had been found to possess anæsthetic properties, as had been demonstrated by Dr. Snow and Mr. Nunnerley with regard to benzine, and by the author with cupion and Persian naptha.

On the Physiological Properties of Carbazotic Acid: by PROF. C. CALVERT.

The author stated that Dr. Bell, Physician to the Royal Infirmary, Manchester, had cured several cases of intermittant fever with this acid. He also said, that he should be very happy to furnish any physician with a small quantity of this substance, so that its real medical value might be ascertained. After describing the process by which pure carbazotic could be procured from carbolic acid he impressed upon the meeting the value of the pure acid as a yellow dye for silk.

Mr Warrington observed that carbazotic acid was first employed in silk-dyeing at Lyons—that in 1851 its price at Paris, where it was manufactured, was 10s. per lb.; and that if the grass tree or black bay gum (which could be imported into this country from Australia for 14s. per cwt.), were employed and treated with nitric acid (a process originally suggested by Dr. Stenhouse) he believed that it might be prepared for a shilling per lb.

On the Results of Experiments on the Preservation of Fresh Meat: by Mr. G. HAMILTON.

This inquiry was undertaken with a view of discovering a method by which beef could be brought in a fresh state from South America. The experiments were made by inclosing pieces of beef in bottles containing one, or a mixture of two or more of the following gases:—chlorine, hydrogen, nitrogen, ammonia, carbonic acid, carbonic oxide, and binoxide of nitrogen. Of these, the last two only possessed the power of retarding putrefaction. Beef that had been in contact with carbonic oxide for the space of three weeks was found to be perfectly fresh, and of a fine red colour. Binoxide of nitrogen is capable of preserving beef from putrefaction for at least five months, during which time the beef retains its natural colour and consistence. When meat that had been preserved by the last process was cooked by roasting, it was found to possess a disagreeable flavour. If cooked by boiling, the ebullition must be continued for a much greater length of time than is necessary for fresh meat.

Dr Calvert remarked, that he had opportunities of observing the well-known valuable anti-putrid properties of carbolic acid,—and instanced the case of the carcase of a horse that was at present in a fresh state, although four years had elapsed since it had been soaked in liquor containing the acid. He recommended the use of this acid for preserving bodies intended for dissection, as it neither affects the tissues nor discolours the organs.

On the Preservation of Milk; by the Abbe MOIGNO.

This was a description of the process invented by M. Mabbru, which consists in expelling the air and gases from milk by heating it in tinned or glazed iron cylinders to a temperature of 217°, in an atmosphere of steam.

On the apparently Mechanical Action accompanying Electric Transfer: by Mr. A. CROSSE.

The author found that by electrifying a sovereign positively in close contact with a piece of carbonate of lime, under nitric acid diluted with fifty times its quantity of water, that a portion of the milled edge of the coin was struck off in pieces, some of which were large enough to retain the milled edge upon them distinctly. The voltaic action was kept up for fifty hours; and at the expiration of that time the coin had lost three grains in weight, and a ground glass rod that used to keep the coin in contact with the limestone was permanently gilded; and this took place at the positive pole. The weight of the portions removed from the coin exactly corresponded with the deficiency. The solution being tested contained nitrate of lime, but no gold nor copper. I likewise found on repeating this experiment with sulphuric acid, similarly diluted—the voltaic being kept up for ninety hours—that six grains of gold were removed from the edge of the coin; and the pieces broken off weighed the same. A strip of glass being placed on the edges of the jar containing the dilute acid, and half an inch above its surface, and in a line with the electric current, had its lower part covered with crystals of sulphate of lime, each one of which was at right angles to the electric current. The friction of the carbonic acid gas liberated from that part of the limestone in contact with the coin, was apparently the mechanical cause of the removal of the edges. The author stated that he had tried various experiments both with frictional and voltaic electricity upon different substances, which in his opinion proved the effects of the mechanical action accompanying electric transfer.

On the Action of Gallic and Tannic Acids on Iron and Alumina Mordants: by PROF. CALVERT.

The author drew the following conclusions from the facts contained in his communication:—1st. That there can be no doubt that tannic acid is the matter in tanning substances which produces black with iron mordants; 2ndly. That the reason of gallic acid producing no black dye is, that it reduces the peroxide of iron in the mordant, forming a colourless and soluble gallate of protoxide of iron; 3rdly. That gallic acid has the property of dissolving hydrate of alumina, and also of separating alumina mordants from the cloth on which they are fixed; 4thly. That the reason of extracts of tanning matter losing their dyeing properties is, that the tannin is transformed into gallic acid; 5thly. That gallic acid possesses the property of dissolving iron, and thus lays claim to the character of a true acid; whilst tannin, not having this action, appears to me to be in reality a neutral substance.

On the Action of Citric, Tartaric and Oxalic Acids on Cotton and Flax Fibres under the Influence of Dry Heat and Pressure of Steam: by Mr. F. GRACE CALVERT.

Mr. Calvert has observed that when two to four parts of these acids are dissolved in 100 parts of water, and linen or cotton dipped into the solution obtained, and afterwards dried in the air, they, on exposure to certain temperatures, completely destroy the tenacity of the fibre. This action of organic acids is interesting when it is known that it takes place even at the low temperature of 180°, 212° and 260° Fahr. He also found that cotton and flax fibres when prepared as above, and then submitted to the influence of steam, of three lb. pressure, were destroyed.

On the Heating Effects of Secondary Currents: by Mr. J. P. GASSIOT.

In January last Mr. Gassiot communicated to the Editor of the *Philosophical Magazine* an account of experiments made with Ruhenkooff's induction coil, and alluded to the fact, that the heating effect, which had already been noticed by Masson, took place in the contrary direction to that which is produced in the primary current, which