the use of imaginary characters in the summation of series, proceeding according to the powers of the series and cosines of arcs in arithmetical progression. He likewise shows, that according to his mode of explanation, certain ambiguous expressions that occur in analysis are perfectly intelligible, and that in the controversy concerning the logarithms of negative quantities, carried on formerly between Leibnitz, Bernoulli, Euler, and Dalembert, all paradox and ambiguity may be made to disappear, by referring to the origin and real import of the impossible exponential quantities.

Although the principal object of this paper is to vindicate the indubitable justness of the operation conducted with imaginary characters, yet in the latter part some arguments are likewise offered in favour of the commodiousness of imaginary expressions for facilitating calculations. And, lastly, it is contended, that in the present state of analysis, these expressions are particularly useful in deducing certain conclusions, which without their aid could not be obtained without much difficulty.

On the Production of Artificial Cold by Means of Muriate of Lime. *By Mr.* Richard Walker. *Communicated by* Henry Cavendish, *Esq. F.R.S.* Read January 22, 1801. [*Phil. Trans.* 1801, *p.* 120.]

Mr. Walker, since his late communications to the Society on the best means of producing artificial cold, received intelligence that Mr. Lowitz, Professor of Chemistry at Petersburgh, had made some experiments, in which a neutral salt different from those he had himself used, and which is but little known or attended to, produced effects which exceeded his expectations. The salt is the muriated lime; which, mixed with snow in the proportion of about 3 to 2, at the temperature of $+27°$, produced a refrigeration which sunk the thermometer to $-55°$; and with this mixture the Professor in one experiment froze no less than 35lbs of quicksilver.

Mr. Walker repeated the experiment with success; but finding that it can only be made during a freezing atmosphere, he resolved to try the effect of this salt, reduced to such a strength by evaporation as to endure being kept in a solid state throughout the year. After describing the expedients used for this purpose, he enumerates the results of two sets of experiments; the first made with the muriated lime prepared so as to be used in winter only, that is, of the specific strength of 1·450; and the other made with the salt prepared so as to be kept for use at any time, the strength of which was 1·490. The apparatus here used (though somewhat improved) is not unlike that described in Mr. Walker's former communication, nor is the process materially different.

The paper concludes with a general view of the different frigorific mixtures:—1st, those composed of chemical substances with ice; and 2nd, those in which the use of ice is dispensed with. In a postscript the author suggests a method of obtaining transparent ice, fit for optical purposes, which is effected merely by immersing a vessel

containing a frigorific mixture in water: by this means he has frequently obtained a pellucid coating of ice on the outside of the vessels, of considerable thickness, and, by adapting the form of the vessel, of any figure that might be required.

Account of a monstrous Lamb. In a Letter from Mr. Anthony Carlisle *to the Right Honourable Sir* Joseph Banks, *Bart. K.B. P.R.S.* Read January 29, 1801. [*Phil. Trans.* 1801, *p.* 139.]

The head of this animal, or rather fœtus, for it was not born alive, was disproportionately small, and had no resemblance to the natural form except in the external ears, which were contiguous, and placed on the front part of the head. Between them was an opening, which proved to be the common passage to both the œsophagus and the trachea. All the organs which are usually found on the face were here wanting; there being neither eyes, nose, nor any of the apparatus belonging to the mouth: the cranium was formed into a hard bone, bearing a near resemblance to the head of a tortoise, and about the size of a plover's egg.

On dissecting this singular production, it was found that the whole cerebrum and all its nerves were wanting. It is hence inferred that the formation and growth of animals in the uterus are independent of any influence from those parts of the brain which properly belong to sensation. The author regrets that this animal did not live to show the phænomena of volition directed to its limbs and other parts, without that intelligence from the organs of the senses which regulate the actions of perfect animals. A careful observance of such circumstances, he thinks, might lead to discoveries of the greatest importance in that part of physiology which is still enveloped in much obscurity.

An Anatomical Description of a male Rhinoceros. By Mr. H. Leigh Thomas, *Surgeon. Communicated by* George Fordyce, *M.D. F.R.S.* Read January 29, 1801. [*Phil. Trans.* 1801, *p.* 145.]

An opportunity having lately offered of examining a living rhinoceros, and of dissecting it after death, Mr. Thomas availed himself of the favourable incident; and in this paper affords us all the information he could gather concerning that curious animal.

Dr. James Parsons having, upwards of fifty years ago, laid before the Society some account of the external parts of a rhinoceros, a recapitulation is here given of what is contained in that paper; but on the other hand, the description of the internal parts, and of some of the organs, is the more ample, and, together with some observations on its habits, will probably prove equally satisfactory to the anatomist and the physiologist.

Without entering into the technical part of this description, we shall only notice here certain peculiarities concerning the eye, in