cattle can be created for £6 per head, or a much lower outlay, and in many cases the existing sheds might be altered at a small outlay. They have this further advantage, that they require less litter than covered yards; and I know several cases where they receive no litter, but refuse hay, &c. This system entails more labour, but the increased value of the manure and the saving of the food would pay more than the extra cost. If the cattle are tied up, the manure taken from them daily should be banked up in a small adjoining pit, which ought to be roofed in.

Mr. Lister, F.R.S., Professor of King's College, author of The Germ Theory of Fermentative Changes, and of Lactic Fermentation and its Bearings on Pathology, has thrown considerable light upon the bacteria of milk, but his researches have been made, I believe, entirely with regard to pathological science. A few days ago I was reading an address delivered by Mr. Lister. "On the nature of Fermentation," and I was much impressed with the results of one of the investigations therein described, and its possible connection with "the dairy." The object in view was the study of bacteria lactis, the particular form of organism which, is the actual cause of what we know as lactic fermentation, or, in more simple language, the souring of milk. Mr. Lister's experiment was to ascertain whether, by preventing the development of bacteria lactis, milk would remain unaltered. He accordingly took means to prevent the development of these organisms, but all the samples of milk underwent fermentation, only of a different sort, the result of which was the development of other organisms, presenting tiny speeks or granules, some orange, some yellow, some red, and other green, also two or three kinds of fungi. Mr. Lister came to the conclusion that | these organisms declared themselves owing to the absence of i bacteria lactis, which would under ordinary circumstances i have been present, and would have smothered or killed these other species.

Now may not this throw some light upon the fungi or growth of various colours observable on many of the soft i French cheeses, Camembert, Livarot, Brie, &c,? It is well known that the makers of these cheeses look with care and anxiety for the due development of the special shade of colour, upon which the sale of their product so greatly depends, and that these shades of colour should change in due order as the ripening process proceeds. Why are these farmers so parti-Because the dealers in these descriptions of cheese cular? demand that they shall be of a certain colour. Why do the dealers make this demand? Because it has been found that the best flavoured cheese is always of certain peculiar shades, and that therefore by valuing the cheese by its colour, they are unconsciously attaching a value to a development of some particular organism, which development is dependent upon circumstances that permit this particular organism to flourish, and which are objectionable to the existence of any other organism. Loctic acid ceases to exist in cheese at a certain stage, and this permits these other organisms to come forth. The question therefore presents itself. Are these various organisms the cause or the effect? If the latter, their importance is not of great moment; but if the former, and both opinion and evidence are in favour of this view, then, a great field is opened.

The researches of Pasteur, Lister, and other scientific investigators have proved that, by the introduction of certain germs into the human system, certain effects are caused, and by the prevention of the development of certain germs other results are obtained. Pasteur has proved that various forms of basteria can be cultivated. May we, therefore, not hope for results from future investigations that may exercise con-

have seen that the souring of cream is essential in buttermaking. If this be so, it follows that there must be a degree of acidity, a certain development of lactic acid, that shall be better than any other degree. May not pure lactic ferment -that is to say, bacteria laotis free from other forms of bacteria-be obtainable, and in a form that can be added to sweet cream in an exact proportion, just as we add a carefully measured quantity of rennet to milk in the process of checse-making? I go farther. If these wonderful organisms do exert the influence and are the causes of certain results, may it not be possible to produce-to grow, in fact-the exact species that may be found to exert the desired influence in the ripening of cheese, &c.? Duclaux. a French chemist, found in certain cheese six different forms of ferments-organisms; and further, that one of these, the chain-vibrio, possessed the particular power of making the small particles



No. 7.-Head of a boar.

of curd sticky, so that they more easily became consolidated into a close mass.

By drawing attention to this subject thus roughly and incidentally, I hope to reach the object I have in view- viz., to show how important a part influences comparatively unknown to us at present may, and indeed are playing in the world, and how important is the "infinitely little," and what a field for investigation and study is here open, not to mention the hundred and one other directions in which an carnest student would find congenial occupation. Now where could this be so well provided as in a school, with land, plants, and animals at the beck and call of science?

## HEALTH.

HEBEDITARY INFLUENCES .- "Like begets like" is an expression as true of health and vigour of constitution as it is of colour, symmetry, character and outward form. It is to a knowledge of this fact, and the enterprise it has awakened in siderable influence upon some of our dairy processes? We the stock-breeders of this country, that the sufer-excellence