

when the pedigree began with them; their altered situation is accompanied by an altered influence. To the eye they are as two to ten, or, in other words, seem to constitute one-fifth. But tested in another way—the whole pedigree being subjected to a careful dissection, and each component part, at least, of what composes the visible formula thoroughly analysed and examined the result is very different indeed. This result shows that the proportion of Fairfax blood is in reality only as 3 to 32; the other 29 parts consisting of Booth blood, with so much of Bates (in the Grand Turk crosses) as 2 is to 32. In fact, out of 32 parts 27 are pure Booth. So that, in this case, the eye is a deceiver to the extent of the difference between one-fifth and three thirty-seconds. And yet people go on, idly not thinking, and satisfied with conclusions that owe their existence to impressions, as we said a little time ago, *projected from the surface*. But, in point of fact the preponderance for Booth blood is even greater than has been expressed, and the Fairfax blood somewhat less; inasmuch as in the blood of Fitz-Adolphus Fairfax that of Warlaby is present, to the extent of one-sixteenth more than a quarter. So that, directly, Booth blood has 27 parts out of 32; and (obliquely, and in addition to the 27 parts) a proportion of the quantity just specified as present in the pedigree of Fitz-Adolphus Fairfax. Fitz-Adolphus Fairfax was, in truth, one of the most magnificently bred bulls in the Herd Book; and it has often been a matter of surprise to us that persons who form their judgments *altogether by pedigrees* should seem to overlook this circumstance. If our observations were designed to extend beyond *pedigree* on the present occasion, we might speak in very high terms of commendation respecting the personal character of the two cows whose sires were Sir Thomas and Fitz-Adolphus Fairfax. The former a noble short-horn, was bred by Mr. Pawkes, of Farnley, and passed into the hands of Mr. Cruickshank, of Sittyton; the latter, and equally admirable animal, was owned successively by Mr. Douglas, of Athelstanford, and Mr. Ambler, and became, in the possession of Mr. Housman, the dam of the mother of Lord of the Harem and of several females not inferior to him. This, however, is not our purpose. We designed to treat of pedigree, and pedigree alone; and if in doing so, we have seemed to some of the readers of the *Messenger* to utter commonplaces, we console ourselves by remembering the words of a master logician, he says, that when much ignorance prevails on a subject, to utter a commonplace may be equivalent to the announcement of a new truth. It is at any rate, even to the initiated, good exercise to investigate a pedigree with reference to its real contents, and to ascertain with precision the quantities or proportions of its constituent parts. We saw a catalogue the other day (it shall be nameless) in which, by the use of addition, instead of division and subtraction, the most ridiculous mistakes are perpetrated—we say nothing of the grammar.—*Bell's Messenger*.

ANNUAL PRODUCTION OF AMMONIA IN LAND.

That air and moisture undergo decomposition in the soil, and that nitrogen and hydrogen are liberated in the process, will really be granted; but the union of these latter two elements, so as to form ammonia, does not accord with our present state of science, no process having yet been discovered by which free nitrogen and hydrogen unite. In a large class of soils, however, when properly cultivated, the nitrogen and hydrogen may be in combination with other substances in such a way, as to obviate the objection thus raised against this highly interesting proposition. In point of fact, such compounds are liberated, and hence are present in the soil. This must be admitted by all who have practically examined the matter, for the smell of them is sometimes as strong as to be felt by the ploughman when ploughing land between the wet and the dry. Such, then, being the facts of the case, the natural production of ammonia in land, when properly cultivated, becomes one of those propositions that require practical investigation.

The production of ammonia in this manner has long been advocated by some agriculturists, in order to account for the great fertilization of land when properly cultivated, as compared with opposite results under bad tillage; and those who do so, are attributing no small part of the heavier crops produced under steam-culture to this fertilizing source. The more common region to which chemists flee for nitric acid and ammonia, is that of the clouds and electricity; but when brought to the test at the bar of experience, we must confess that this looks more "like building castles in the air" than solving the problem of how one field is enriched by showers, while another is the reverse—results which would be otherwise were nitric acid and ammonia directly applied by artificial means. And, besides this, land has been, and being, fertilized through the instrumentality of air and water artificially applied, apart altogether from the clouds of electricity (we mean the electricity of the atmosphere). Those farmers, for example, who are now enriching their lands by means of the steam-plough at this season, do not leave *terra firma* for the upper world, there to catch the lightning and the clouds, or yet stretch wires across their fields and fly kites to bring down the igneous fluid to perform its wonder-working miracles in the soil. On the contrary, they simply smash up their tenacious clays between the wet and the dry, let in the atmosphere, and thus leave them, in nature's laboratory subject to chemical laws with which we are not as yet sufficiently acquainted practically to trace the effects produced to their respective causes, although the extra bushels of corn and tons of mangolds evidently speak for themselves.

Should the proposition which we have thus chosen to notice be eventually established, and adopted into applied science as a realized matter of daily experience, at the will of the far-