"The principal points of a thoroughbred Short Horn may be thus enumerated: A yellow skin. With a yellow, cream-colored, or drab nose; this drab may run to a brownish shade, called mitcolored, but not smoky or black. The colors of the hair, a lively red (the red running down into a deep cherry, or up into a yellowish), or a brilliant white, and these red and white colors either separate in patches or spots by themselves, or intermixed in roan, either color more or less prevailing; the horn waxy, or a cream color, with a little black about it; but what black it has at the tips, it should also be small, short, and slender, either crumpled, gently drooping, or slightly turned up; a general levelness of the back from the shoulders, at the setting on of the neck, to the tail; a fulness and depth of body throughout, with great breadth; short and fine legs; a fine tail—a symmetrical appearance throughout—with a lively, gentle, yet sprightly look of the eye. There are other intermediate points of excellence that may be named to constitute a perfect Short Horn; but those which are named are usually considered indispensable as making up a truly well-bred animal."

INSENSIBLE MOISTURE AND ABSORBENT POWER OF SOILS.

BY C. W. JOHNSON, F. R. S.

[*From the Mark Lane Express.*]

There are few important questions more interesting to the agriculturist than the moisture of his soil. There are, indeed, hardly any lands in which the supply of their watery portion may not be so altered as to materially increase their produce. Take, for instance, our grass lands—compare the lands of the grass growing counties of the west of England with a yearly average rainfall of 40 inches (equal to 4,000 tons per acre), with similar soils of our far drier eastern counties, where grass lands are found only in a very limited proportion, and where the annual rainfall is only about 20 inches, or 2,000 tons of water per acre; and then ask if there is any reason for this difference in the proportion of grass lands, except the widely different supply of moisture? And again, why do the great irrigators, who hold their farms on our great chalk formation, so carefully avail themselves of the brilliant springs which arise in that well farmed district? The water they employ on their noble water meads is free from organic matter, its chief constituent is carbonate of lime (about 20 grains in the gallon); but *on a chalk soil* this we can hardly consider to be a manure; and yet these springs, as soon as they arise from the earth, are found to spread fertility over large districts of, otherwise. inferior pastures. Then again, why do we in Croydon in our sewage irrigated meads find that our Italian rye grass will not yield its maximum amount of grass (say about 30 tons, or more, per annum) without we keep the land in a certain degree of moisture—viz: by yearly applying from 3,000 to 6,000 tons of sewage, equal to a rainfall of from 30 to 60 inches per acre? They would hardly need so copious a supply of liquid manure for the sake of its organic matters, in fact, hardly any amount of the richest manure would induce such a growth of grass as is here raised by the sewage,

The question, so important to all landholders, has not escaped the attention of the Royal Agricultural Society of England. This great association (we may proudly feel the greatest agricultural society in existence), has directed its attention to one of the most important branches of the inquiry, viz: "The retention of moisture in the soil of arable soils in dry climates," and for a valuable essay on this subject they have awarded a prize to Mr. Robert Vallentine, of Burcott (*Jour. Roy. Ag. Soc.*, 2nd series, vol. v., p. 336). The question on which our author has so well and so practically written, is, I opine, hardly exhausted by the conditions of the Society. It might well, I incline to think, be extended to include the *absorption* as well as the retention of the atmospheric moisture. Nature (ever in a good humour to instruct the farmer) here again lends her aid. She shows him, that the *insensible* watery vapour of the atmosphere is not deposited on all his lands alike—for instance, the dew, so valuable to his crops on dry soils and counties, is not found on all portions of his farm in equal amount; near the sea for instance, or adjoining rivers, the insensible moisture in the atmosphere is more considerable, and the deposit of dew in their neighbourhood more extensive than on fields not very far removed. Even in the broiling climate of India, where at certain times dew is almost unknown, even there, during every night, dew is found near to running waters. We may here pause to remind ourselves, that in our dry eastern corn-growing counties the farmer notices that, near the sea and near to certain rivers, his crops of wheat are in general, of rather superior value.

Now, it is the insensible moisture to which it may be useful to direct our inquiry. And it may chance that the result will suggest some experimental examinations not unlikely to produce profitable results. First, let us briefly pause to remember the proportion of the water always present in the air we breathe. On the very threshold of our inquiry a startling fact presents itself, the *varying amount* of this insensible watery vapour, and (what looks very little indeed like a *chance* arrangement) the extent of that moisture is by far the greatest when other sources of supply to vegetation are not present, and our crops need it the most. Let us carefully note the result af the examinations of the atmospheric vapour, made at the Royal Observatory, at Greenwich, by Mr. J. H. Belville (*Manual of Thermometer*, p. 19).

The mean amount of insensible moisture in a cubic foot of the atmosphere at 9 A. M. and 3 P. M. is given in the following table in grains; is is the result of observations during seven years:

	9. A. M.	3 P. M.
January	2.70	2.84
February	2.58	2.72
March	2.77	2.85
April	3.26	3.37
May	4.02	4.06
June	4.71	4.78
July	5.07	5.26
August	5.00	5.07
September	4.66	4.77
October	3.96	4.01
November	3.27	3.42
December	2.78	2.89

The reader will here remark how, by Creative beneficence, the amount of the insensible moisture of the air, of which our crops so copiously avail themselves, is about twice as much in June, July and August as in the winter months; so that in summer, when the other sources of supply of moisture to plants are commonly withheld, this is increased.

And again, not only is there this insensible moisture placed in the atmosphere, but there is contained in all soils, however poor and however *apparently* devoid of any moisture, the power of absorbing moisture from the air. And what Davy long since proved (*Elem. Ag. Chem.*, p. 183), this power *increases* with the *value of the soil.* He remarked truly enough that, after having examined many soils, he had found that the extent of atmospheric moisture they absorbed was ever the greatest in the richest lands; so that he thought it was one good method of judging the productiveness of a soil. Thus he found that 1,000 parts of a celebrated soil from East Lothian, when first dried in a temperature of 212 deg., and then placed in an atmosphere saturated with moisture at a temperature of 62 deg., gained 18 grains.

1,000 parts of a fertile soil from the valley of the Parret gained 16 grains.

1,000 grains of a soil from Mersea, in Essex, worth 45s. an acre, gained 13 grains.

1,000 grains of a coarse sand, worth 15s. an acre, gained only 8 grains.

1,000 grains of the soil of Bagshot Heath gained only 3 grains.

This absorbent power of our soils is apparently ever in action; for I never found any soil (after even the longest absence of rain) but what contained a certain amount of moisture. To give the result of only some experiments: It was on the 6th of August in 1864, that, having noticed how well the crops, the