


lence. The red, the white, and the roan were used by them indiscriminately, hence the foundation and development of an excellent breed of cattle, but hence also that terrible heritage of present day herds, variety in colour, for colour is hereditary as well as quality. If this last statement be true let us make our deductions. We have just said that these early breeders worked irrespective of colour. The preponderance of superior animals in their time were roans or modifications of the same. Now, colour and quantity being hereditary, we naturally conclude that the roan of to day would be the superior animal and our natural conclusions are confirmed by what we see around us every day. In the show ring, the roan is winning honours for the breed all over the world, and the pure white—the white elephant of Shorthorn breeders—which is a nearer relative of the roan than is the “beautiful red,” is a proverbial prize-winner at all our fat stock shows.

These facts have induced another disease in the Shorthorn camp, known as the “roan craze,” somewhat similar in type but less virulent than the “red colour mania.” The roan colour disciple, of course, seeks to exclude as far as possible the red colour from his herd. There is a possibility of following this line of breeding too closely, for the roans are by no means invariably the better animals. The stockman, however, of either persuasion who thus discriminates at the expense of quality and to the general detriment of the breed, is not worthy of the name of breeder. He might be quite properly designated fancier, and he then would be eligible to identify himself with our Poultry and Pet Stock Associations, if indeed those societies would admit such inconsistencies into their ranks. Or those “fanciers” in justice to the rest of the Shorthorn fraternity, or rather in justice to themselves and their high ideal, might institute a brotherhood of their own. Requisites for the new order, —an advanced registry with colour as sole basis of qualification; judges scale of points, color, 100; a medical staff, eye specialists, to examine all judges and directors for colour-blindness, etc. etc.

Colour is alright in itself, and we all admire the beautiful in colour as well as in everything else. “A thing of beauty,” Keats says, “is a joy forever,” while in less poetical language, the ungainly is a perpetual eye-sore. We each have our preferences, and, other things being equal, we may quite properly indulge those preferences, but just so long as we make real merit subservient to fancy points we may not expect to improve, nor yet even hope to maintain, the present standard of the breed.

J. W. WIDDIFIELD, '95

Soil Temperature.

 Several articles of the current volume of this journal, the subject of soil physics has been the theme. It is one to which very little attention indeed has hitherto been given; indeed apart from the matter of drainage it is quite safe to say that no attention whatever has been given to it. By many it has been supposed that all that was necessary to do to grow a crop was to plough the land and to sow the seed. Others have conceded that a certain amount of nitrogen, phosphoric acid, and potash was necessary before a satisfactory crop could be grown; but very few indeed are the

farmers who have devoted any study to the physical condition of the soil, apart from other subjects.

It is very important that the soil should contain a liberal supply of plant food, but this is not the only matter deserving of attention. Plant food would be of little service should the physical condition of the soil be such that the plant cannot avail itself of it, consequently just so far as the physical condition of the soil falls short of perfection to just this extent is the plant prevented from utilizing to the highest degree the plant food available in the soil. This is a very wide subject, for the condition suitable for one crop may not be suitable for another. Upon the farmer is placed the obligation of knowing under what condition each crop will best prosper and then to study how he can best reach this condition. From this it does seem imperative that at least in thickly populated districts the successful farmer must be a specialist.

Possibly no part of the subject of soil physics is more important than that of the degree of moisture, and in this connection we would refer our reader to an article in the March issue, “Preservation and Control of Soil Moisture,” which will be better appreciated the more frequently it is read. Soil moisture is important also because of its close connection with soil temperature. It is a well recognized fact that a great amount of heat is required to evaporate from the soil, even a small quantity of water. By experiment it has been shown that the heat necessary to evaporate one pound of water would raise the temperature of the soil 10 degrees, consequently if this heat must be expended in evaporating the water then the soil must remain just so much cooler. The best farm management, therefore, will aim to prevent any evaporation of water from the surface of the soil, and thereby not only retain the moisture in the soil but also to raise the temperature a few degrees. This end may be attained by early shallow tillage, as will be gathered from the article to which we have referred. By this means the field is converted into something of a hot bed, the cold water from the subsoil is prevented from rising to the surface which the heated upper layer is prevented from transmitting its heat to the lower subsoil. By this means the surface soil is brought into a condition most suitable for the germination of the soil deposited in it.

Rolling also has an important influence in maintaining the soil temperature, since a smooth rolled surface presents less exposure to radiation than an uneven lumpy surface. In addition the natural slope of a field and the specific heat of its soil will largely influence the temperature at any time. But these are not so easily under the control of the farmer.

We have intimated the extent to which a soil may be cooled by evaporation. Let us notice the temperatures most suitable to plant growth. It is well known that ordinarily vegetation does not begin under 45° or 48° F., nor reach its maximum under 68° or 70° F. Corn which germinated in 3 days at 65° required 11 days when the temperature was 51° F. The mean April temperatures will likely fall below this. It is thus easily within the farmer's ability to increase the temperature of his soil, at least a few degrees, which increase may mean all the difference between an early vigorous growth or a late and feeble one.

For cereal crops the matter of soil temperature is one of great moment. These crops, it is well known, complete their season of growth before the process of nitrification has well begun in the soil, consequently the nitrates when formed are largely washed from the soil and lost. But if the temperature of the soil can be increased and nitrification started before the crop has completed its growth there would be brought to the soil one of its most needed fertilizers. Besides nitrification increases still further the temperature, so that should the desired condition be early reached it would be better able to withstand succeeding coldness.

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