

a leather strap round the chest (1) taking the place of a collar in all but the heaviest draught work. This necessitates the shafts of the vehicles being very low, and the plan is rather extensively followed in the United States. It would seem that a horse cannot utilise the weight of his body in drawing from a strap which only crosses the point of the shoulder. It is all very well for light work or for trotting races.

#### Weather, Health and Plant-Growth.

Meteorology, the science of the weather, of rains, frosts and dews, of storms and hurricanes, of heat and cold, of deluge and drought, is such a very complicated subject that very few agriculturists have seriously set themselves to study it, notwithstanding the obvious and essential connection that exists between meteorology and agriculture. There is no study which requires a more patient and dogged persistence in the accumulation of facts and observations, and few studies are slower in yielding fruits to those who pursue them. Delicate instruments and the most careful powers of observation alone constitute a demand which few individuals are either able or willing to comply with. Then, the results of meteorological inquiry are, as a rule, general, and apply to rather wide areas, whereas the individual farmer would much prefer local prognostications, and herein is introduced a difficulty to which we have not as yet discovered the clue. A good deal of weather-lore has a legendary existence amongst farmers, ploughmen, and shepherds as plenty of local rhymes and couplets will testify, but, unfortunately, people are prone to magnify and give undue prominence to a solitary fulfilment, once in a way, of an old-fashioned weather prophecy while they take no notice of the hundreds of cases in which the saying is found to be at variance with the current phenomena of nature. We make bold to say that nine-tenths of the people in this country still believe that the moon influences the weather, and that a "change" in the moon will bring a change in the weather. (2) Particularly in rainy seasons do we hear the hope expressed that with the change in the moon which is imminent the weather will "clear up." No theory has been more completely exploded than that which attributed an interdependence between the lunar phases and the terrestrial storms. The fact is the moon "changes" once in every seven days, and any change in the weather cannot fail to happen either within two or three days before or within two or three days after the lunar change, so that phenomena which are nothing more than mere coincidences came in the old times to be regarded as having the relation of cause and effect, the more distant, less known, and more mysterious moon being naturally regarded by superstitious minds as the cause. The progress of the vigorous young science of meteorology has dispelled this lunar hallucination, and many another one beside. Some items of agricultural interest may be gleaned from the meteorological conference which recently took place at the Health Exhibition. Dr G W Tripp read a paper on some relations of meteorological phenomena to health, and though his observations bore solely on human health, they are practically equally applicable to the health of our farm stock. He says a great deal too much attention is paid to the barometer if we regard it as indicating only, as it really does, variations in the weight of the column of air pressing upon the body, because, except at considerable elevations, where the barometer is always much lower than at sea-level, these variations produce but little effect on health. In this country alterations in the barometric pressure are chiefly valuable as indicating an approaching change in the wind, as

well as in the amount of moisture in the air; hence the instrument is often called the weather-glass. A sudden diminution in the atmospheric pressure, marked by a sudden fall in the barometer is likely to be attended with an escape of ground air from the soil, and therefore to cause injury to health, especially amongst the occupants of basement rooms, unless the whole interior of the building be covered with concrete.

The effects of a high temperature as marked by a high reading of the thermometer vary very much according to the amount of moisture in the air, as when the air is nearly saturated in hot climates, or even in summer in our own more or less languor is felt, with great indistinctness to bodily labour, and no doubt our working horses feel it as well as ourselves. With a dry air these effects are not so noticeable, the reason being that in the former case but little evaporation occurs from the skin, and the normal amount of moisture is not given off from the lungs, so that the body is not cooled down to such an extent as by dry air. Sunstroke is probably the result, not only of the direct action of the sun's rays, but partly of diminished cooling of the blood by want of evaporation from the lungs and skin. Rapid changes of temperature in this country are often very injurious to the young and old, causing diarrhoea and derangements of the liver when great heat occurs, and inflammatory diseases of the lungs, colds, &c., when the air becomes suddenly colder, even in summer.

The effect of rainfall on the health of men and animals is chiefly due to alteration of level of ground water. This is a subject almost entirely overlooked, and special attention is directed to the fact that when ground water has a level persistently less than five feet from the surface of the soil, the locality is usually unhealthy, and should not, if possible, be selected as a residence. In other words, avoid a locality in which the surface of the water in a well is usually within five feet to the surface of the ground. Fluctuations in the level of ground water, especially if great and sudden, generally cause ill health amongst the residents. Dr Brehanon, in his reports of the Privy Council, has shown that consumption—using the word in its most extended sense—is more prevalent on damp than on dry soils, and it has been shown that an effective drainage of the land and consequent carrying away of the ground water, has been followed by a diminution of diseases of this class.

The quantity of moisture in the air exercises a marked effect. Moist air is a better conductor of heat than dry air, which accounts for much of the discomfort felt in winter when a thaw takes place as compared with the feeling of elasticity when the air is dry. In cold weather, therefore, moist air cools down the skin and lungs more rapidly than dry air, and colds consequently result. London fogs are injurious, not only on account of the various vapours given off in the burning of coal, but in consequence of the air being in winter generally saturated with moisture at a low temperature.

Variation in the temperature and pressure of the atmosphere exert a considerable influence on the circulation of air contained in the soil, called ground air. The quantity of air in soil varies according to the material of which the latter consists; a gravelly or sandy soil will contain per cubic foot more air than a loam or clay. Estimates vary from 3 to 30 per cent., but the latter is probably too high. Consequently, if a cess-pool leak into the ground, the offensive effluvia, if in large quantities, will escape into the soil, and are given off to the surface of the ground, or are drawn into a house by the fire; but, if small, they are rendered harmless by oxidation. Injurious gases and suspended or dissolved organic matters have been known to pass for 130 feet along a disused drain, and above 30 feet through loose soil.

(1) Common enough in England and there called a "case-collar."

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(2) A universal belief at Sorel.

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