

in mechanical character or chemical composition, from the prevailing soils over a large portion of Nova Scotia. As the pastures become old they decrease in productiveness, partly from exhaustion of fertility and partly from excessive growth of weeds that are avoided by cattle.

The cattle are watered in the various ways usual in country places,—in summer time at springs, brooks, swamps or waterholes in the pastures or by the roadsides, and in winter usually at wells in or near the farm or house yard, or at neighbouring springs. Numerous watering places were examined, and samples of the water taken from such as were ascertained to be actually used for the watering of cattle on the infected farms.

A. Alexander Fraser's farm, Beeches Road, Bayview :

Four cows lost by disease this season. Pasture soil light loam, with black mud in lower marshy portions and along course of brook. Water of brook clear and sweet. Pasture very weedy, much Toad flax (*Linaria vulgaris*), Senecio Jacobaea, Lobelia inflata, Hypericum, Ranunculus acris and other weeds left untouched by the cattle. In the swampy parts Eupatorium perfoliatum (Boneset), Iris, Carices, Scutellaria, &c. The hay in Mr. Fraser's barn was found to be much mixed with senecio in a black, soft state (its herbage does not dry into a stiff hay). In the woods adjoining the pasture there were several species of Boletus, Polyporus, Agaricus and other fungi.

Water sample No. 1, from brook in Mr. Fraser's pasture. The brook originates from a spring in the woods above, and crosses main road.

Laboratory Analysis.

Water of good lustre and taste, no odour, considerable sediment.

Total solids, grains, 2.5 per gallon.

On incineration, residue becomes dark brown . . . black, and then easily clears up.

Chlorine, gr., .85 per gallon.

Ammonia, free or saline :

Grains, .01582 per gallon.

M.G., .226 m. g. per litre.

Ammonia, organic or albuminoid :

Grains, .01456 per gallon.

M.G., .208 m. g. per litre.

Metals—Iron, trace.

Hardness = 8 degrees.

Nitrates, nil.

Microscope.

Veg. Epidermis, wings and scales of insects, diatoms, Infusoria, Desmudeæ, Acarina, Anguillula, Conferva, Rhizopods, Euglypha, Mineral particles.

Water sample No. 2, from spring in pasture, some distance below Mr. Fraser's house :

Water of good lustre and taste, no odour, considerable sediment.

Total solids, grains, 3 per gallon.

On incineration, residue became darkish brown, wavy, clearing slowly, (loss .5 per gallon). Fixed residue, 2.5 per gallon.

Chlorine, grain, .8 per gallon.

Ammonia, free or saline :

Grains, .0056 per gallon.

M.G., .08 m. g. per litre.

Ammonia, organic or albuminoid .

Grains, .00476 per gallon.

M.G., .068 m. g. per litre.

Metals—Iron, slight trace.

Hardness = 2.5 degrees (Clark).

Nitrates—nil.

Microscope.

Conferva, Cladocera, Cyclops, Diatoms, Monas, Vegetable debris (straw), Nais, Hydra.

Water sample No. 4. Tank for winter watering.

Yielded considerable sediment, but, after subsidence, clear, good lustre and taste, no odour.

Total solids, grains, 3 per gallon.

Fixed do 2 do

On incineration, residue at first becomes black, and then clears.

Chlorine, grains, .9 per gallon.

Ammonia, free or saline :

Grains, .00742 per gallon.

M.G., .106 per litre.

Ammonia, albuminoid or organic.

Grains, .0112 per gallon.

M.G., .16 per litre.

Hardness = 16 degrees.

Metals—Iron, trace.

Nitrates, nil.

Microscope.

Conferva, wings and scales of insects, Infusoria, Diatoms, Sea-weed, Acarina.

The above three analyses of the waters used on Mr. Fraser's farm show that the waters are of good quality as regards lustre, taste and absence of odour; also in the total solids being only 2½ and 3 grains per gallon, in the chlorine not exceeding nine-tenths of a grain per gallon (although near the sea-shore), and in total absence of nitrates. On the other hand, the amount of albuminoid ammonia in sample No. 1 is rather high, and so is the free or saline ammonia; but the whole facts do not justify us in assuming that there is any notable contamination from animal matter, even in this sample. The other two must be regarded as fair samples of drinking water.

B. Acadia Farm, owned by Donald Fraser, Esq. :

Cows at present all healthy, and have been since great mortality in 186, when three precautions were adopted, and have been rigidly observed, viz. ; (1) Not to

yard cows at night in the manure yard ; (2) to keep the pastures free from weeds ; (3) to prevent cows from browsing near exposed carcasses or graves of animals.

This farm is in a high state of cultivation, free from weeds; the cattle and sheep do not range beyond its bounds.

No analyses made.

C. Farm of William McDonald, West River. Soil light sandy loam on surface, clayey beneath; pasture pure, few weeds; water rather stagnant; one cow ill; several deaths this season, eight have died within the year. In seven years, twenty-six head have died. Of five now in pasture, two are sick.

Water sample, No. 6, from brook running through Mr. McDonald's farm (running also through Mr. Logan's, where no disease is known.)

Water slightly turbid, of good lustre, slight yellow tint, no odour, considerable sediment.

Total solids, 20 grains per gallon.

Fixed do 11 do do

Residue became black.

Chlorine, 9.25 grains per gallon.

Ammonia, free or saline :

Grains, .0336 per gallon.

M.G., .48 per litre.

Ammonia, albuminoid or organic :

Grains, .01862 per gallon.

M.G., .266 per litre.

Hardness = 4 degrees.

Metals—Iron, slight trace.

Nitrates, nil.

Microscope.

Portions of insects, Anguillula, Rotifers, Acarina, Infusoria, Rhizopods, Vegetable fibres, Diatoms, Confervæ, Larvæ, Mineral particles.

Water sample No. 7, from pool on Mr. McDonald's farm.

Water slightly turbid, but of good lustre, very light yellowish tint, no odour. (One bottle of the water emitted odour (foecal?) after keeping.)

Total solids, 4.5 grains per gallon.

Fixed do 1 do do

Residue light brown; became quite black and cleared with difficulty.

Chlorine, grains, .25 per gallon.

Ammonia, free or saline :

Grains .0056 per gallon.

M.G., .08 per litre.

Hardness = 3 degrees.

Metals—Iron, minute trace.

Nitrates, nil.

Microscope.

Entozoastraca, Desmudeæ, Bacteria, Infusoria, Rhizopods.

The first of these waters, No. 6, is remarkable for the large amount of solids, twenty grains to the gallon, of which