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The ROCKY MOUNTAIN HUSBANDMAN is designed to be, as the name indicates, a husbandman in every sense of the term, embracing in its columns every department of Agriculture, Stock-raising, Horticulture, Social and Domestic Economy.

AGRICULTURAL.

HOW PLANTS ARE BUILT UP.

J. J. Mechi, the eminent English farmer and savant, recently delivered a lecture under the auspices of the Essex and Chelmsford Museum, from which we take the following in regard to how plants are built up and formed:

We ought, as agriculturists, to know this, so as to be able to employ the right building materials in the right place—I mean in the subsoil as well as in the top soil, for we cannot manure the subsoil through the top soil, as the latter has the power to arrest much more of the elements of manure than we ever apply to it. Liebig, "*Modern Agriculture*," p. 25, says: "Plants contain combustible and incombustible elements. The latter, which compose the ash left by all parts of plants on combustion, consist, in the case of our cultivated plants, essentially of phosphoric acid, potash, silica and sulphuric acids, lime, magnesia, iron, chloride of sodium. Their combustible portion is derived from carbonic acid, water, and ammonia, which, as elements of food, are equally indispensable. By the vital process plants are formed from these materials when the atmosphere and soil supply them at the same time in suitable quantity and in the proper proportions. The atmospheric elements do not nourish without the simultaneous action of the elements of the soil, and the latter are equally valueless without the former. The presence of both is always required for the growth of the plant. . . An element of food is ineffective if there is absent a single one of the other elements of food which are conditions of its activity." In Cheshire the one thing wanting was bone-earth (phosphate of lime). Our own bodies are formed of the same elements as plants, and I have often caused merriment when I have said, in the presence of a goodly assemblage, like the present, of well-developed agriculturists, that we are all gas and water, except a very small percentage of earthy matter. If dessicated, seventy-six per cent. of our weight would go off as steam, and if we were then burned, twenty per cent. more would go to the air as gasses, leaving only the small percentage of incombustible ash which we had consumed in our food, and which was indispensably necessary to our formation. Without plenty of water the elements of our bodies, like the sap in plants, would not circulate. We can see, at the Kensington museum, the details of our formation. Economical housewives would feel uncomfortable if aware that in every pound of lean meat, they get three-quarters of a pound of water. Meat is much dearer food than bread and cheese, or than oatmeal and milk, and our laborers well know this.

In my mind's eye I picture to myself the atmosphere filled with undeveloped forms of plants and animated creatures. We may safely paraphrase Shakspeare—sumstituting chemist for poet—who says, "The poet's eye in a fine frenzy rolling, doth glance from heaven to earth, from earth to heaven, and as imagination (science) bodies forth the form of things unseen, the poet's (chemist's) pen turns them to shapes, and gives the airy nothing a local habitation and a name." Professor Tyndall has enlightened us on the subject of solid matter in the air; and, as for its perpetual motion, we have only to examine a sunbeam in a dark room or cellar. The bulk of every plant and living object is derived from, and ultimately goes to, the air. Undertakers always bore a hole in leaden coffins for the escape of gasses, which would, otherwise, bulge and burst the coffin. Recently an undertaker, (rather green in the matter), omitted to make a hole in the leaden coffin, and was astonished in finding it forced out of shape, and a gurgling noise within. In his distress he applied to a friend who soon managed an escape for impent gasses. 120,000,000 tons of coal which we raise annually, once came from the air as vegetation, and disappear in air by combustion, again to form vegetation, except in both cases the trifling percentage of incombustible ash which ever was, and ever will be, earthly and non-ærial. A city or a haystack disappears in combustion, leaving only the earthly and non-ærial ashes. Well, then, if the air is so full of good and necessary things, how can we best obtain them for our use and profit? How can we best get back from the atmosphere that enormous amount of carbonic acid and ammonia (plant food) given to it by decay, combustion and by other sources? In well-drained and properly cultivated soils the air circulates freely, and the roots of plants obtain from the carbonic acid and ammonia circulating within it a portion of their food by their roots, just as their leaves do from the carbonic acid and ammonia in the atmosphere. Liebig, in his *Principles of Agricultural Chemistry*, No. 7, p. 19, says, "The roots of plants in regard to the absorption of their atmospheric food behave like the leaves—that is, they possess, like these, the power of absorbing carbonic acid and ammonia, and of employing these, in their organism, in the same way as if the absorption had taken place through the leaves.

ALFALFA.

In the July, 1875, report of the department of Agriculture, was an article from the pen of N. Wyckoff, of Woodland, Yell county, California, in reference to alfalfa. We extract the following, presuming it will be of interest to our readers, many of whom are experimenting with this forage plant:

In the winter of 1854 I sowed four acres with some seed brought from Chili, and, so far as I know, it was a part of the first parcel of seed introduced into this State. Mine, with that of many others who sowed that season proved to be so foul with mustard and kale, that after two years' effort to eradicate the pest I became disgusted and plowed it up. However, it gave evidence of being a desirable grass by its remaining green and growing through the whole dry season, and even in the warmer part of our winter, and by the fondness the cattle evidenced for it—they keeping it grazed close to the ground. Some clusters which escaped the plow (for it has a very tough and wiry root, extending many feet into the ground,) are still alive, and compare favorably with the sowing of ten years later, and it justly deserves its German name of "everlasting clover."

In the winter of 1864-5 I renewed my efforts, obtaining good, clean seed, and sowed twenty-five acres. The plowing had been done well, and early in the winter—two months before the time of sowing, which was about the middle of March—using ten pounds of seed to the acre. This proved to be light sowing; but it was fortunate for me as it yields more and better seed when thin, thereby leading me to make the raising of seed a specialty. From this parcel of land I have gathered seed and sold to parties in nearly all the coast and valley counties of this State. From all I have received good reports. From eight acres of this sowing, in 1869, I cut two crops for hay and one for seed, the first and third for hay. It yielded over five tons of seed, nearly 1300 pounds per acre, and was sold for twenty-five cents per pound.

Its yield in some seasons is truly beyond credence. In 1870 I estimated the yield to be ten tons to the acre, and grazed the fields from the fifth of November to the first of April. In this county (Yolo) some have cut five crops during one summer. This was up the Sacramento river, where the soil is warm, light and alluvial.

From Santa Barbara county I have advices that six and seven crops have been cut during one season; but there it is warm and grows through the whole year.

Some cut when the growth has attained a height of two feet, without reference to its age or maturity. I am of the opinion that it ought to have greater age to be of the highest excellence. My rule is to let it continue the blooming for ten days or more; it is then less washy and far better for horses than if cut earlier. For milch cows it is good at any age.

There is a great advantage in fallowing for this crop. The time to plow is late in the winter or early in the spring, before the rains have entirely ceased. By thus exposing the soil to the sun during the summer all vegetation is destroyed; it should then be put in fine tilth by the plow, harrow and roller if needed. During September or October the seed may be sown and lightly brushed or rolled, but not harrowed after sowing, as seed germinates well only on or near the surface. From fifteen to twenty pounds are sown to the acre.

We do not usually cut anything from it during the first season, pasturing it only.

SEED SOWING.

How many complaints are constantly being made on the part of those gardeners of all kinds who are yet among the rudiments of gardening that they cannot get certain seeds to grow. The first impulse is to blame the seeds and the seedsmen, never thinking for a moment, or unwilling to think, that the failure arose from any want of skill or lack of knowledge on their own part; the seedsman is often made a scapegoat for the errors of the inexperienced—no doubt a convenient arrangement, but decidedly wanting in justice towards the unfortunate vendor, for it is obvious that it cannot possibly be the interest of any seedsman to sell seeds of indifferent growth; but he oftentimes has to "suffer and be strong" in the face of misrepresentations that should not have been made.

Many seeds, as full of life and vigor as Hercules, never bring forth leaves, flowers, or fruit in due season, because they are unskilfully sown, or sown in the wrong temperature, or at the wrong time, and under conditions most unfavorable to their well-being. That this is of constant occurrence is abundantly evidenced by the number of inquiries made on all sides as to the proper time and proper mode of sowing seeds. Should they be sown in autumn or spring?—thick or thin, deep or shallow?—and numerous other questions of this character are constantly being put, and for the sake of the first beginnings in the art of horticulture, which the Rev. Canon Hole once termed "the most gentle and delightful of all occupations," these questions ought to be answered as fully and simply as possible.

Simple as these questions may appear to the advanced horticulturist, they are yet the very first that arise in the minds of those who are wanting in gardening experience; and so well are seedsmen aware of this that they give much valuable information in their catalogues, in order to meet the necessities of this class of buyers.—*Gardener's Chronicle.*

ORIGIN OF PLANTS.—Cabbage and buckwheat originated in Siberia; celery in Germany; the potato is a native of Peru; the onion originated in Egypt; tobacco is a native of South America; millet was first known in India; the nettle is a native of Europe; the citron of Asia; oats of North America; rye came originally from Siberia; the parsnip is a native of Arabia; parsley was first known in Sardinia; the sunflower was brought from Peru; spinach was first cultivated in Arabia; the pear and apple are from Europe; the horse-chestnut is a native of Thibet; the cucumber came from the East Indias; the quince from the Island of Crete; the radish is a native of China and Japan; the horseradish came from the south of Europe.

HORTICULTURE.

SMALL FRUITS.

Some of the readers of the *Western Farmer's Almanac* may be disposed to turn from this page under the feeling of disgust excited by the title, thinking, no doubt, that fruit growing must indeed be but "a small business" for a farmer to trouble himself about. To the owner of extensive estates, to the breeder of valuable stock, or to the feeder of large flocks and herds, which, in the grand result of his sales, place him in the rank of the cattle-kings, the very words that are applied to this branch of agricultural industry must indeed seem beneath his notice, or contemptibly *small*—and yet it is claimed that these fruits should be considered of sufficient importance to demand and receive the attention of all agriculturists, both large and small farmers, and of all persons who occupy a piece of land however limited.

There are other objects to be derived from the cultivation of small fruits than the mere consideration of pecuniary returns, though these may be made to assume very respectable proportions. Some of these desiderata might well be referred to under the heads of the *Amœnities and the Hygienic Effects* of fruits.

He who has never planted and nursed and noted the progress of a berry-patch, watching the gradual development of the first fruits, and who has never triumphantly laid the earliest products upon his table, can have no idea of the delight attending the successful issue of his experiments. His reward is a pure enjoyment, it is a victory without alloy; while he is pleased and benefitted no one else is grieved or wounded, nor in any way worsted by his success; his victory is not one of conquest over enemies, but the result of patience and perseverance in overcoming natural obstacles. Reference is here made especially to the amateur cultivator who has planted and tended these fruits for his own pleasure and for that of his family and friends. This enjoyment is not denied to the market-gardener also, who has besides the satisfaction of reckoning the profits that must result from his successful investment of money and skillfully-directed labor.

The hygienic effects of summer fruits cannot well be overstated. The cravings of the system for vegetable acids are a natural indication of their necessity to the human organism. This is particularly the case on the approach of the summer solstice; and at that very season nature comes to the rescue, offering the early fruits, which are characterized by that happy admixture of the saccharine and the acidulous principles that renders them so universally acceptable to our palates. The digestive apparatus accepts the grateful offering, and fortunately there are few exceptions to the axiom which may be announced: That "well-ripened fruits, when freshly gathered, are among the most wholesome articles of the *materia alimentaræ*.—*Western Farmer's Almanac.*

THE total area of cranberry lands in cultivation in the eastern States, is 15,000 acres.