The Carleton Sentinel;

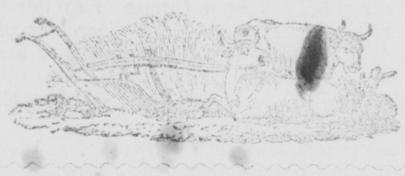
AND

FAMILY JOURNAL.

Devoted to Agriculture, Literature, and General Intelligence.---Neutral in Politics.

"Truth, Justice, Freedom, here shall find a home."

NUMBER 3. TUESDAY, JULY 10, 1849. VOLUME 2.



AGRICULTURE.

AGRICULTURAL CHEMISTRY.

The different substances derived from the analysis of plants are very complex and numerous; and yet the number of their ultimate elements is limited; none of them, so far as is known, containing more than seventeen; viz., carbon, oxygen, hydrogen, nitrogen, sulphur, phosphorus, iron, iodine, chlorine, bromine, sodium, silicium, potassium, flourine, magnesia and manganese. These are called the *ultimate elements* because they are the final result of analysis and can not themselves be separated into other elements: these combine in such a manner as to form all the various substances found in plants; these substances are called the *immediate elements*, because they are more easily separated and obtained without a close and rigid analysis.—Some of them are composed of the same ultimate elements and in nearly the same proportions; and yet their properties are totally different. The following are the immediate elements so far as known; Gum, sugar, starch, gluten, albumen, extractive, lignine, tannin, coloring matter, wax, bitter principle, resins, camphor, caoutchouc, fixed oils, volatile oils, acids, alkalies, earths, metallic oxides and salts. *Gum Arabic*, or plume-tree gum, may be taken as the type of this class of substances: it is of a yellowish white color, nearly tasteless and inodorous, insoluble in alcohol, but easily dissolved in water, with which it forms a mucilage which is nutricious as food. *Sugar* is found in many vegetables, but is principally obtained from sugar cane, maple trees and beet roots. Pure sugar is in large, transparent, colorless crystals; it has a pure sweet taste, is soluble in water of one third its weight, but less easily in alcohol; it is highly nutritious, and is decomposed by nitric and sulphuric acids into its original elements, carbon, oxygen and hydrogen. *Starch* is procured from the grains, potatoes, arrow root, &c. It is obtained by soaking substances which contain it, in cold water until it becomes milky, then straining off the coarser parts; after a few hours a white powder falls to the bottom which is starch; it is insoluble in cold water or alcohol, but easily dissolved in hot water; it is highly nutricious as food.—*Gluten* exists in the flour of grains, from which it may be obtained by washing paste or dough for a long time in water. It is an elastic, sticky substance of a grayish color, without taste or odor, nearly insoluble in water or alcohol, but soluble in acids and alkalies. Wheat flour contains more of it than any other vegetable substances.—It yields from 18 to 24 per cent.; the remainder being mostly starch. Gluten is the most nutricious of all vegetable elements. *Albumen* abounds in the juice of many plants used for food: it is a thick, glairy fluid, resembling the whites of eggs, soluble in cold water, and coagulated (thickened) by boiling water or acids It is nutricious, and is found in the animal as well as vegetable kingdom. *Extractive* exists in most vegetables, and may be obtained by steeping them in hot water and then evaporating the solution, when a brownish powder will remain, which is but slightly soluble in water or alcohol, but readily dissolved in alkalies; it is not nutricious as food. *Lignine*, or woody fibre, constitutes a large proportion of the solid parts of all plants. It may be obtained by boiling wood for a long time in water or alcohol. When pure it is tasteless, inodorous, and entirely innutricious, and insoluble in water or alcohol. The fibres of cotton and linen are lignine. *Tannin* is found in many vegetable substances in great abundance, as in the gall nut, oak and hemlock bark: it is an astringent, brownish powder, soluble in alcohol and water, difficult of combustion and not nutricious. It forms an insoluble precipitate with animal gelatine. Hence, by soaking the skins of animals in a solution of tannin they are converted into leather, which is no longer liable to putrefaction. *Coloring Matter*, which constitutes the basis of various colors, is found in many vegetables. Nearly all vegetable colors are destroyed by the action of light, and all of them by the action of chlorine. Acids and alkalies destroy or change them. Almost all vegetable colors have an affinity for the fibres of cotton, linen, and wool; but most of them require the intervention of another substance, called a *mordant*, which is used to strengthen their affinity, or "set the color:" alum, copperas, and other salts are used for this purpose. *Wax* is found in many plants. Beeswax may be taken as the type of this class of bodies: it is insoluble in water or cold alcohol, but dissolved in boiling alcohol: it melts at 144 degrees: when pure it has a white crystaline appearance. *Bitter principle* is a pale yellowish powder, intensely bitter, soluble in water and alcohol; having little affinity for acids or alkalies. It is used in brewing to check fermentation and to preserve fermented liquors: it is contained in the hop and is used in medicine. *Resin* is obtained from the pitch of various trees; it is found in the largest quantities in the pine and fir, from which it exudes wherever the bark is broken. Resin, (or rosin,) is highly inflammable, insoluble in water, but readily dissolved by alcohol and essential oils. The principal resins are, common rosin, copal, mastic and elemi. Common rosin is what remains after the distillation of pitch to obtain spirits of turpentine. *Camphor* is a gumlike, white, brittle, semi-transparent substance, having a peculiar odor, and a strong acrid and slighly bitter taste. It exists in several plants, but is obtained mostly from the camphor tree: it is highly inflammable, and resembles, in some respects, the resins: it is nearly insoluble in water, but is dissolved by alcohol and oils. *Caoutchouc*, or "India-rubber," is the product of several trees in tropical countries: it exudes from them in the form of a milky juice, which hardens by contact with the air. It is insoluble in alcohol or boiling water, but dissolves in ether and coal oil, when it may be moulded into any shape, which it will retain after the evaporation of the solvent. Oil of turpentine dissolves it, but it dries very imperfectly: at a temperature a little above that of boiling water it melts, and never after resumes its elasticity. It is entirely indigestible and unfit for the food of animals; but its uses in the arts are numerous and well known.

Fixed Oils. Oils are divided into two classes, viz: Fixed and volatile; the former are capable of being distilled without decomposition; the latter are not. The animal and vegetable oils agree in their properties very closely, in every respect. The fixed oils are obtained by pressure from the seeds of various plants: they have little taste or odor, lighter than water, congeal at a lower temperature, and require a higher heat than that of boiling water to evaporate them. They are highly nutritive, and when combined with soda, form fine white soap. By exposure to the air they become sticky and rancid. They are insoluble in water, and, with the exception of caster oil, but slightly so in alcohol: they dissolve easily in ether and the essential oils.

Volatile or Essential Oils, in the vegetable kingdom, are very numerous—they give to all plants their peculiar odors, and are obtained from them by distillation: most of them are lighter than water, inflame easily—dissolve in alcohol and form essences. When pure they are colorless, and evaporate without leaving a greasy stain as fixed oils do: they do not form soap on being mixed with alkalies, and are not used as food.

Acids exist in the vegetable kingdom in great variety, and are sometimes found ready formed and nearly pure: they unite with alkalies, metallic oxides and earths, and form salts, and are less liable to decomposition than other vegetable products; they are all sour to the taste, and are decomposed at a red heat, the principal ones of importance are, the nitric, acetic, oxalic and tartaric. *Alkalies* are found in many vegetables, and always in the form of salts, in combination with an acid: most of them are only sparingly soluble in water, but dissolve in hot alcohol, from which they form crystals on cooling; their taste is intensely bitter. Potash and Soda were formerly called vegetable alkalies, but are now known to be metallic oxides: the following are some of this numerous class, viz.: *Morphia*; *Quinia* and *Strychnia*. The *Earths* found in plants are, Silica, Alumina, Magnesia and Lime: they are found in the ashes of plants and will hereafter be described. The only *Metallic Oxides* found in plants are those of Iron and Manganese, and these in minute quantities. When the ashes of plants are reddish brown, they contain oxide of iron. When black or purple, oxide of manganese. Among the *saline compounds* found in plants, some of the most common are, sulphate of potash, phosphate of lime and common salt. This concludes what is necessary to say about the composition of vegetables.

Fermentation.—Fermentation is a peculiar decomposition or transposition of the elements of a complex organic substance, by the agency of some external disturbing force, different from ordinary chemical attraction, as heat, air, or contact with some other body similarly affected.—This process is not yet perfectly understood. There are several kinds of fermentation, as the *saccharine*, (or sugar) fermentation, which takes place during the germination of seeds and the malting of barley: the *vinous*, is that which occurs during the process of making wine from grape juice, and the *acetic*, which occurs during the transformation of cider into vinegar.

(To be Continued.)

PROTESTANT CORNER.

The "Holy Office" at Rome.—Few of our readers can have forgotten the horrifying description which we lately published respecting the exploration of the buildings of the "holy office" in Rome. The Rev. Hugh McNeile, in a speech at a meeting of the Church Missionary Society last week, thus alluded to it:—"Nothing, in these remarkable days, is more remarkable than the tenderness, in the disguise of charity, which has crept over and paralysed many minds towards Romanism. But it won't do.—The antichristian system is doomed. In the righteous judgment of God a species of exposure is going on at this time which bids fair to prove a blessing to the world.—We do not justify any violence—if violence there has been—in the leaders or members of the young Republic: but the wrath of man is made to praise God, and those republicans are laying bare the atrocities of that fearful system, which were known indeed, and plainly told years ago, by those who had studied the system, but pertinaciously denied by others as too horrible to be credited, and sneeringly rejected by the Liberal press as exaggerations of the middle age fables. Now, the prison-house is open to the public: the cavern cells of the inquisition, blasphemiously called the holy office; the rings of iron for chaining the victims to the rack; the trapdoor for dropping the refractory into the boiling lime-pit; the piles of calcined bones; the locks of clotted hair—all these damning proofs of Rome's guilt in blood, are dragged to the view of an awakened and disgusted people. In vain shall France, in the triumph of inconsistency, employ her republican troops to crush a republic more righteous than her own. In vain shall Austria, in the triumph of a dogged and unteachable consistency, employ her imperial legions to crush Italian liberty. The present belligerents at Rome may, indeed, be physically beaten, by their combined assailants, but in the mean time they have been made instrumental to an exposure, the moral consequences of which can never be beaten. The days of priestly domination at Rome are ended.

Tuscos in Rome.—I have the best information that a law is about to be proposed in the Chamber, for the establishment of perfect religious liberty, and that there is a certainty of its passing. Even now there are men at work in the city in the noble task of founding a native protestant church: and surely I need not say of what vast importance it would be that this should be accomplished.—For good or for ill, Rome has ever exerted a powerful influence over the destines of the world. "The Pope rules Rome, and Rome rules the world," is an old saying. How important, then, that an influence in favour of the truth should go forth from the ancient stronghold of anti-Christian delusion. Let the churches, then, be on the watch! The arena is opening, and, what is more, the combatants are ready. There are men in Malta and elsewhere, ready to our hand, of deepest piety and fervid eloquence, who have already fled from Rome and its delusions, at the cost of their worldly all. They are waiting the opportunity and the call, and, in the spirit of Paul, "as much as in them is, are ready to preach the Gospel to them that are at Rome also."—*Ex. Pap.*

Increased Regard for Religion among the Upper Classes in England.—We have often had an occasion to speak of the prayer-meetings at Washington, attended and conducted by Members of the American Congress. We are now happy to learn, from our English papers, that within a few months, meetings of a similar character have been established in London, in very aristocratic circles. "Within the last six or seven weeks," says one of these journals, "the lady of a distinguished Peer has thrown open her drawing-room once every week, for the purpose of holding devotional meetings, on the part of persons of her own rank of society. As many as a hundred noblemen and gentlemen, mostly members of Parliament, with their wives and other near relations, meet together on these occasions, and spend the evening in purely Christian intercourse. Prayer and praise, and the reading of a chapter of the Bible, by one of the clergymen present, with a few expository observations, constitute the exercises of the evening."