for the growth of the plant and the development of the flower and fruit. As yet very little is known of the ultimate chemical combinations and decompositions which result from the action of heat, light and air, on the vital principle of the leaf.

During the formation of the flower and fruit, oxygen is absorbed and carbonic acid given off as in germination. As little is known regarding the chemical properties of the coloring matter of vegetables, this brief and necessarily imperfect description of a few of the transformations continually occurring on a magnificent scale throughout Nature is now brought to a conclusion.

Science and Agriculture.

The London *Agricultural Gazette*, in speaking of the ignorance of farmers and the comparative slow progress of improvements in agriculture since old Jethro Tull shed the first rays of science on the farmer's calling, says the scientific world is responsible for the backward state of agriculture compared with other arts, and that farmers are not altogether culpable for their ignorance of the scientific principles of their calling, since those who had the power failed to exert it for the benefit of the farmer, till the example was set by the immortal Davy. Now the writer says: 'What if farmer Dobson did think last year, that Ammonia was the name of a gentleman's daughter, he knows better this year; and next year we will hear of his putting sulphuric acid and bone-dust into his compost-heap to seize this fair lady as she flies. Why should he be expected to be a ready-made chemist? When he was a boy chemistry was scarcely born. He had no education in chemistry How should he know it had anything to do with farming? He is not to blame for his ignorance; the blame, if anywhere, lies with those who blame him, viz: the scientific world, who have allowed the physical world to grow nearly 6,000 years old, and have only just made the notable discovery that nature's science (chemistry) is eminently and necessarily applicable to the art of human subsistence (farming) I say it is the *backwardness* of science, not the *ignorance* of farmers that deserves improvement.—*Boston Cultivator.*

Strength of Small Things.

Among curious experiments recorded, are some trials of the strength of beetles A dark tube is made of card, closed with glass at one end This glass is hung on a pivot, like the swinging glass in a church window. The beetle makes for the light, and pushing to get out, lifts from four to ninety times his own weight. The smaller the creature, the greater his power. The mole, or the rabbit makes burrows in which the little ant would be lost, yet the ant's strength is relatively much greater than that of the mole. The excavating power of the latter is, however, most wonderful. We once saw a mole turned out of his track with a spade. The little creature fell upon a gravel walk, and in less time than it takes to write down the fact, the four-footed engineer was out of sight again.

An African ant-hill is thousands upon thousands of times larger than the builders The pyramid of Cheops is but ninety times the height of a man If a lion had the power of a grasshopper he could leap over a mile: and it has been asserted that if a man could leap like a flea, the misstatements of the celebrated "Moon Hoax" might be corrected by notes taken on the spot.—*Philadelphia Public Ledger.*

Carbolic Acid.

Carbolic acid is now so generally employed as a disinfecting agent, that a *resume* of the various forms in which it is made, in the largest establishment carrying on its manufacture in England (Calvert's), may prove of interest

1. Solid carbolic acid of three different qualities, the point of solidification of which varies from 81 degrees to 108 degrees Fahrenheit

2. Liquid acid of two different qualities, constituted almost entirely of cresylic acid According to Mr. Calvert, the disinfecting properties of the latter substance are those of carbolic acid

3 Soaps in which the proportion of carbolic acid varies from five to twenty per cent according to the uses to which they are to be applied

4. Disinfecting powder, composed of silex and fifteen per cent. cresylic acid The silex is obtained from alum factories, where kaolin is treated with sulphuric acid. The disinfecting acids become thoroughly incorporated with it, forming a dry and pulverulent substance.—*Scientific American.*

Horticulture.

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THE ORCHARD.

Winter Pears.

There is progress being made in the flavor of winter-ripening pears. Our first experience with this class of pears was not at all satisfactory. They were all deficient in flavor, or so very variable in quality that no reliance could be placed upon them. It was very annoying to cut a fine showy sample of Beurre Diel or Vicar of Winkfield, expecting to enjoy an agreeable dessert, and find the flavor scarcely better than that of a raw turnip. Once or twice in a decade these, and kindred varieties, have indeed come up to the pleasant expectations entertained of them, but as a rule they have not equalled in flavor the apples of the same season.

But now we have at least two American varieties of Pear which ripen in winter and maintain in a very high degree the fine flavor of the autumn sorts. It has been the privilege of the writer to test during this month of January the quality of Dana's Hovey and Jones' Seedling Pears, and the result has been highly satisfactory. They are both fruits of high flavor and fine quality, and deserve a place in the pear orchard of every gentleman who values excellence more than size.

Dana's Hovey.

was raised by Francis Dana of Roxbury, Massachusetts. The tree grows vigorously, and seems to be possessed of a strong and hardy constitution, that will make it well adapted to a large part of the pear-growing region of Ontario The fruit is small, quite small, not larger than the Seckel, another exemplification of the adage that nature puts up her choicest productions in small parcels. And it also much resembles the Seckel in flavor, so much that we doubt not many of our readers would suppose, judging from the flavor alone, that it was a Seckel kept in some way far beyond its season.

Jones' Seedling.

originated near Philadelphia, the fruit is about medium in size, being something larger than the other variety we have named, but not quite as fine grained in its texture. Its appearance is attractive and inviting, and the flavor a very agreeable mingling of the sugary and vinous In its native place it is ranked as an October fruit, but grown here it can be kept well until the middle of January.

These are American varieties, and show that those who maintain that we must look to native productions for our most valuable and finest flavored fruits, are not without some substantial evidences in support of that position.

Barrelling Apples.

Visitors to Covent Garden cannot fail to have noticed that the Newton Pippins and other apples imported from America reach this country in a remarkably perfect condition. This is owing to the fact that they have been so carefully packed in the barrels, that no amount of rough usage with which they may meet during their journey, can possibly shake them loose to bruise each other For this purpose various kinds of presses are employed, worked by levers or by screws. A new contrivance of this kind has lately appeared, which combines effectiveness and simplicity to such a degree that we are induced to quote the following article on the subject from the *American Agriculturist* —

Whenever we have had anything to say about barrelling fruit, we have insisted upon the importance of so packing it that it cannot move and become bruised in transportation. When fruit is barrelled, the barrel should be so filled that a moderate pressure will be required to bring the head into its place. A few of the apples, &c., next the head may be slightly flattened upon one side, but the rest of the contents will be kept from injury. The necessary pressure is applied in various ways. The simplest is to use a joist or other stick of timber for a lever. One end of this is placed in a notch in a post, or under a cleat nailed to a post or an old tree, as a fulcrum The barrel is placed under the lever near the fulcrum, and power applied by a man pressing on the opposite end of the lever. Some blocks of wood will be needed for followers to place between the head of the barrel and the lever. A press of this kind will answer every purpose, but it is clumsy and unhandy. Several portable presses or clamps have been invented and patented, consisting essentially of a platform on which to stand the barrel; to this are fixed two upright iron rods, which are attached above to a cross-piece, in the centre of which is a screw; the barrel being placed under the screw with the necessary followers, a few turns bring the head into place. A more simple press is shown in the engravings. There are two iron rods, one end of each of which is turned to form a claw to catch under the bottom of the barrel.

Barrel Press.

The Press in Use.

The other ends of these rods are fastened to the ends of a bar that is bent at right angles, which we may call the handle of the affair There is a strong cross-head which has a short rod at each end The lower ends of these rods are also attached to the handle but a few inches distant from the ends where the other rods are attached. The working of the press will be readily understood from the engravings, the claws catch under the lower edge of the barrel, and the cross-piece, with a follower, goes across the head of the barrel; when it is put on, the handle is upright, as shown in figure 1 It will be seen that by bringing down the handle a powerful leverage is exerted, the rods, which are caught by their claws under the bottom of the barrel, acting as fulcrums. The operator regulates the pressure by his foot, while the hands are free to fasten in the head, as shown in figure 2. This press has the advantage of being light, all in one piece, and doing its work with a single motion.—*The Garden.*