AGRICULTURAL CHEMISTRY.

That such a general knowledge of chemistry as most educated persons possess may be useful to the practical farmer none will deny, but that farmers can or ought to attempt to become scientific chemists, or that they can apply any purely chemical knowledge to the business of husbandry, are propositions few reasonable persons will affirm. At one time the most extravagant expectations were entertained of the benefits chemical discoveries would confer to agriculture, and farmers were frequently and solemnly enjoined to become chemical experimentalists.

Nobody deals more sensibly with the subject of agricultural chemistry than Dr. Voelcker, of the Cirencester College, and in his lecture on "its relation to the cultivation of root crops," delivered before the Royal Agricultural Society, we find its limits very justly defined. He believes that among the landed proprietors, their agents and the larger farmers, especially the rising generation, a more extensive knowledge of the sciences applicable to agriculture is needed. All these want better instruction. But to teach the small farmer or the laborer chemistry is simply absurd. To either, the pursuit would be waste of time. So chemistry should never be made the direct guide to the agriculturist. cience is, after all, only the systematic arrangement of well authenticated facts, and the rising generation should be taught its general principles. But many professors of chemistry have over-estimated their own powers, and *instead of explaining the experience of practical men*, they set themselves up as guides to the farmers; they have overestimated the powers of the new science, and in consequence stumbled.

The foregoing remarks are very just. Again he says: "Agricultural chemistry in its application to farming is altogether a new science; and hitherto it has been, like every new knowledge, too vague and too general in its doctrines as well as in its researches. What is required at the present time are experiments made for a special purpose, researches carried on in the field as well as in the laboratory. We have no need of the joint labors of practical men and men-of-science. There are questions which can only be properly investigated if the man of science heartly joins with the practical man, working cheerfully together, each in his own department, —a nearer approach between agriculture and science, in short, is what is required at the present time. A general knowledge of the principles of farming, however useful to the practical farmer, never will help him to grow a large crop of turnips; he must have special training in practical matters in order to be a successful farmer. So it is with chemical knowledge. Men may have excellent general chemical knowledge, but if they have not special chemical knowledge in relation to farming, their labors will be of little direct utility to the agriculturist."

In reference to the culture of root crops, he says that generally ammoniacal manures, such as guano, are thrown away on roots; and phosphates are more profitable. Guano and superphosphate of lime both rather retard the germination of the seeds, but they push forward the young plant in its early growth. This we believe to form the true value of such manures, though perhaps this is over-estimated.—*London Economist.*

WHAT IS THE JONVAL TURBINE?

MESSRS. EDITORS:—Here is a mooted point; will you please settle it? I think the Jonval is the only turbine set above the waste-water in the race, and that that is its distinctive feature. Of course it can be set at any point of the fall, up to, say, 28 feet; but is any other turbine so set? And as a gentleman gives me a cut of his wheel immersed in the tail-race, the presumption with me is, that it is no Jonval. Am I right?

Very respectfully,

JOHN GILL.

Patriot, Ind., July, 1859.

[The Jonval turbine consists, as we understand it, in conveying the water to the wheel through a stationary wheel set above it, and having water-channels set different but corresponding in number to the buckets of the wheel. The employment of air-tight draft-boxes for water-wheels, to set them at any point up to 28 feet in hight, is the invention of our countryman, Z. Parker, and for which he secured a patent about twenty years ago.—EDS.

UNIFORM MUSICAL PITCH.

A question of considerable importance to all persons interested in musical art was lately brought before the Society of Arts, London, viz., the desirableness of having a uniform pitch. Besides the very great inconvenience, and the often necessarily discordant results of having a variety of pitches, as at present, it appeared by the statements made at the meeting, by gentlemen competent to testify in such matters, that in England the pitch, or rather pitches now generally adopted, were considerably higher than that in use a century ago; that English instruments, generally, and those made in Paris for the English market were higher than those used in France; and Madam Goldschmidt (Jenny Lind), who attended in company with her husband, declared that the present high pitch was spoiling the voices we had, was one reason why we had so few good voices, and if the raising of the pitch went on as it had hitherto done, the human voice would loose its beauty and strength. A standard pitch had been adopted in France, and it was found to be lower also. Mr. Hullah, who is well-known to have had much experience in such matters, Sir George Smart, Mr. Otto Goldschmidt, and others, thought, in fact, it was evidently the opinion of the entire meeting, that the pitch should be lowered, and a standard the same as, or very similar to, the French should be adopted. The French pitch was middle C. 522 vibrations per second; Hullah's 512 vibrations, and Sir George Smart's and Handel's were somewhat lower. But the meeting considered it prudent, at that stage, merely to affirm a resolution—"That it is desirable that one uniform pitch should prevail."

AGRICULTURAL INVENTIONS.—John Young, of Joliet, Ill., has recently patented two inventions, the one a rotary plow, which as it moves forward divides the sod into thin strips by circular cutters; the sod is then raised in narrow slices and inverted by long tangential oblique set moldboards coming successively into operation: the other is a cultivator, which has a central share and two long side wings, which are set oblique to the line of draft and can be adjusted laterally to suit wide and narrow rows of corn, &c.; it also has a rake or harrow arranged behind the share and wings. This effectually cultivates the soil, removes the weeds and does its work remarkably well. They are two very useful inventions.

METAL SAILS FOR SHIPS.—Mr. F. Trevithick, of Penzance, has patented a curious pair of improvements in the sails and keels of vessels. He constructs the sails of strips or narrow bands of thin sheet metal. In applying keels fixed tubes are used at intervals, parallel with the center of flat-bottomed boats or vessels. Through these tubes chains are passed, to which the keels are attached, and other chains pass over the sides of the vessels, which are also attached to the keels, and by which the keels may either be lifted into the vessel or brought to act as lee-boards.

SALTING MEAT.—A French professor denounces the use of saltpeter in brine intended for the preservation of flesh for food. That part of the saltpeter which is absorbed by the meat, he says, is nitric acid—a deadly poison. He ascribes to this chemical change all the diseases which are common to mariners and others, who subsist principally upon salted meat—such as scurvy, sore gums, decayed teeth, ulcers, &c., and advises a total abandonment of saltpeter in pickle for beef, &c.; the best substitute for that article being a small quantity of sugar, which renders the meat sweeter and more wholesome.

CEMENT FOR HOLES IN CASTINGS.—The best cement for this purpose is made by mixing one part of sulphur in powder, two parts of sal-ammoniac, and eighty parts of clean powdered iron turnings. Sufficient water must be added to make it into a thick paste, which should be pressed into the holes or seams which are to be filled up, The ingredients composing this cement should be kept separate, and not mixed until required for use. It is to be applied cold, and the casting should not be used for two or three days afterwards.

TO MAKE GOOD BLUE INK.—Mix six parts of Prussian blue (carefully powdered) with one part of oxalic acid and a little water, and when the mixture is complete, add rain water so as to reduce it to writing condition. A little gum-arabic must also be added to prevent the ink running on the paper.

"IN HOSTS THEY COME IN LEGIONS MARCH AWAY!"

Subscribers continue to pour in upon us at but a slightly diminished rate from what they did three weeks ago, at the commencement of the New Series of the SCIENTIFIC AMERICAN; and in a corresponding ratio the first three numbers of the new volume are disappearing from our shelves. Of Nos. 1 and 2 we have less than *one thousand* left; and therefore we again admonish those who are delaying their remittances for a few days longer, with the view of forming still larger clubs, or because it is not quite convenient to remit the money immediately, that we fear some of them will be disappointed by not getting the back numbers. We assure the public that the SCIENTIFIC AMERICAN will continue to be the best as well as the cheapest scientific and mechanical journal published in the world; and many persons, who regard it as an invaluable work, but who are delaying to subscribe, thinking "there will be time enough by and by," will be unable to obtain the volume complete, we fear. So, friends, send on your subscriptions *at once*, and admonish your neighbors of the danger of delay, if they value the paper as a work of reference and ever intend to become subscribers.

IMPORTANT TO GARDENERS.

A gardener having occasion to newly paint the woodwork in the interior of his greenhouse, determined to make trial of the theory of the absorption of heat by black color, with the view of promoting the maturity of his plants and shrubs by means of a greater quantity of caloric. In the preparation of the black paint he used coal tar, that is to say, tar produced by the distillation of coal in the manufacture of gas. This coal tar, besides the advantage of its color, offers considerable economy in painting, being about one-eighth of the price of the material generally used in mixing black paint. The painting here in question was executed before the setting in of winter. On the return of spring the gardener observed, with no less surprise than satisfaction, that the spiders and other insects which had infested his greenhouse had totally disappeared. He, moreover, remarked that a vine, trained on an espalier which, for the space of two years, had been sensibly decaying, and which he had purposed to uproot for the purpose of planting another in its place, had acquired such renewed health and vigor as to be capable of producing excellent table grapes. Having applied his new paint to the props, treillages and espaliers of all his sickly trees and shrubs, as well as those which, though in full bloom, were being devoured by insects, success again crowned his experiment. Caterpillars and snails disappeared as rapidly as the insects had vanished from the greenhouse. The fruits produced by the trees thus treated have elicited the approval and eulogy of purchasers. Similar experiments tried on the vineyards o. the Gironde have, it is said, been attended by the same excellent results.—*The Bulletin.*

CORK TREES IN CALIFORNIA.

The Patent Office having obtained seeds of the cork tree from Europe, sent several packages last year to California, which possesses a climate similar to France and Spain, where it flourishes. These seeds were planted at Sonora, and about 87 per cent. of them have come up, and give promise of becoming stately trees. Cork is one of the most useful and valuable articles connected with the arts, and we have no substitute which can take its place. We import annually about $209,500 worth of corks, and $18,000 worth of the bark of the tree. If this tree prospers in California, of course a considerable saving will be effected to the country, because we shall be able not only to manufacture all the articles of cork which we use ourselves, but we will not be required to import any of the raw material.

IMPROVED MOLDING-SAND.—A correspondent (J. W. Winter) of the *Dental News Letter* describes the following as a discovery which he has made in sand for molding:—

"Take equal parts of soapstone and Bristol-brick; pulverize finely, and mix them together. It it superior to any other molding-sand, as it requires but little moisture to pack it firmly, and you can get a finer impression, and can pour your metal at any stage of heat, without spoiling the mold."