

the oxygen and carbon of the atmosphere, compounds which are favourable to vegetation; according to Mayer and Brown, it merely improves the physical properties of the soil; while, according to Reil, it is an essential constituent of the plant. Hedwig called it the saliva or gastric juice of the plant; Humbolt and Thaer considered it a stimulant; Chaptal ascribed its action to a supposed power of supplying water and carbonic acid to plants; and Davy regarded it as an essential constituent of plants.

According to Leibig, it fixes the ammonia of the atmosphere; according to Sprengel, it supplies sulphur to the formation of the leguminous plants; and according to Dana it merely assists the decomposition of other substances in the soil.

The question has been much oftener asked than answered, "who shall decide when doctors disagree?" If great men who have spent their whole lives in examining such questions, are so much at variance, to what power is the farmer to look, to dissolve the thick mist and remove his doubts, in relation to such matters? The answer cannot be avoided. To repeated, varying, and actual experiments in actual cultivation. Such experiments have long since established the gypsum, lime and other manures; while eminent chemists are still disputing not only on their theory of action, but whether they are really of any value whatever.

The distinction must be drawn between *The application of Science to Agriculture* and *THE SCIENCE OF AGRICULTURE*. The former has been already explained; the latter consists of the facts which practice has established and the truths it has developed, reduced to a system, and in some degree arranged under fixed principles. The Science of Agriculture explains the theory and operations of draining, subsoiling, and manuring, of rotation of crops, of cultivating the soil, of adapting culture to crops, and many other practices which distinguished the best modern specimens of farming. It is a systematic arrangement of knowledge, which the experience of centuries has accumulated. Many of its principles, it is true, are those of other sciences; but they were usually discovered in the course of cultivation, before those sciences had a distinct existence. A professor of one of our colleges has cited the practices of draining, subsoil ploughing, trenching, and clovering and plastering, as specimens of the application of science to agriculture. But these have all resulted entirely from experience; they are indeed specimens of scientific farming, but they originated from the science of agriculture, as just explained, and not from science, to agriculture in its common acceptation.

The best modern practices of agriculture, are in nearly all cases much in advance of the theory. It is for this reason that the cause of agricultural improvement would be much better served by holding up for imitation the experience and management of the best farmers of the day, rather than a too frequent reference to chemical authority. How many of our citizens might have avoided shipwreck of their property, and made handsome profits, if they had followed the best established courses of cultivation? But, have any failed for want of knowing the sciences? Some of our farmers make money rapidly,—that is, they farm well. Others make a scanty living; and others are reduced to insolvency. What is the reason of the success of the former,—what the cause of the failure of the latter? Is it a knowledge of chemistry in one case, and a deficiency in the other? No one will ever think of ascribing the result to such causes.

It is not denied, that important aid may yet be derived from agricultural chemistry. But its advance must be slow and attended with caution. Years of careful and accurate analysis of soils, and of the trial of manures, separate and mixed, in connection with experiments on growing crops performed with the utmost judgment and precision, can only settle uncertain points. Reasons will thus be rendered clearer by science, and practices explained, enforced and established. But these experiments must be performed chiefly by the enterprising few and not by the common farmer. The study is indeed deeply interesting and fascinating; and every one who has a knowledge of the natural sciences, will not unfrequently find useful applications in the every-day business of life. But to hold them up as a means by which the young farmer is to conduct his business most profitably, while he yet remains wholly or partially ignorant of the most improved modern systems of practice and management, cannot be followed by the

best result. The most important knowledge must be first attained, afterwards that which is less essential in practice. If possible, neither should be neglected. We should not devote any study because it is encompassed with some difficulties. Chemistry is affording many valuable suggestions in trial and practice; and as Professor Johnston very justly remarks, "It is foolish to refuse to avail ourselves of the torning light because it is not equal to the mid-day sun."

European News

Selected from various British Papers from the 19th October to November.

FRANCE.

The Inundations.—The most deplorable accounts were every moment arriving in Paris of the effects of the food in all parts, more particularly in the southern departments of France. The India Mail which was expected to arrive at the Poste aux Chevaux, Paris on Sunday afternoon, did not reach until half past six o'clock on Sunday morning. The Bordeaux Mail, due on Sunday, did not arrive—thus leaving us without ladrid news for two days. The Duc d'Angoulême was said to have arrived at Bayonne (having left Madrid on the 15th).

The Loire had committed fearful ravages between the plain of urec, Andrezieux, and Roanne. The St. Etienne railway had been partly destroyed at Andrezieux. All the boats laden with merchandise to the amount of 1,000,000*l.*, lying in the canal of Igoin, had been sunk, and 1000 hhd of bandy, each worth 800*l.*, and 150 cask of wine were lost. At Pouilly 1700 ieces (hog-heads) of wine of the count and of Beaujolais, had been carried away by the floods. The swell in the Loire began to be felt at Nantes on the 21st, but the authorities had cautioned the inhabitants residing along its banks against its consequences, and no accident has as yet occurred. The Allier and the Loire at their junction, became a immense sea. 1400 labourers, engaged in the construction of the railroad, would have inevitably perished, had not provisions been sent to them by a steamboat, which took the poor men on board and brought them to a place of safety. In the Val of Orleans ten districts were entirely aid waste, 89 boats and 250 boatmen harrived at Orleans from Paris, and were employed in carrying provision an relief to the inhabitants of the inundated country. Near Amboise the Loire had burst the great bank by which its course is partially restrained, and floying with irresistible force through the opening thus made, had made an immense breach in the Orleans and Bordeaux Railway, which is there carried along an embankment. About four kilometres of of this embankment are said to be entirely washed away, and the line for some miles, although it would not have been materially injured by an ordinary inundation, is supposed to have received so much damage that some months must elapse before it can be again opened for traffic.

Subscriptions have been opened in the offices of the Paris journals in favour of the sufferers by the floods. The Orleans Railway company has subscribed 30,000*l.*, the *Journal des Debats* 500*l.*; but it is due to our factious contemporary, *le Chaivari*, to state, that it took on Saturday the initiative in this work of benevolence.

The *Journal des Debats* states that the list of the departments suffering under the scourge of the inundations, is every day becoming larger. New accounts of losses and misfortunes arrive from the entire course of the Loire.

The picture of this great disaster represents a crowd of interesting episodes, some of which we are about to describe. Hitherto we had no detailed accounts from Tours; at present some have reached us. La Val is ravaged by the waters equally with Orleans. Our statements are beginning to reach us from the Lower Loire. At Angers the floods of the Loire and the Maine cause considerable alarm. The Allier had produced immense loss in the department which bears its name, and in that of the Puy-de-Dome which it traverses. In fine, the height to which the Rhone has risen, as well as the streams with which it is supplied, cause serious apprehensions in the south. At Lyons the rivers have not produced any serious alarm. The following accounts have reached us from the department of the Allier:—Moulins has likewise to dread an inundation. The waters of the Allier have risen to such a height as to cause serious apprehensions for the safety of the lower quarter of the town. Several boats moored in the port of Meulins, and laden with coal, have sunk, but fortunately we have not to regret any loss of life. At the Palaiseau

on the 17th inst, the inhabitants were filled with apprehension. The waters of the Besbre rose to a prodigious height, and filled the lower part of the town. At six o'clock cries of distress were heard from the inhabitants who had taken refuge in the garrets from the flood. The bridge of Auzon, on the Allier, has been carried away, together with the barracks and the stores on the quay. At the Brasaget the inundations caused still greater misfortunes, as two men were buried in the ruins of a house, which was levelled with the ground. In the village of Perros several houses have been levelled. At Point-du-Chateau the damage is estimated at 60,000 francs. Et Crevent, the Allier swept off the suspension bridge as if it were a sheet of paper. During the night of the 17th instant the rivers Dore and the Durole rose with such rapidity that the postillon of the mail from Lyons was swept off, together with his three horses, by the flood, near the bridge of Montier, within sight of the postmaster and a number of persons, who were unable to render him any assistance. The Allier has destroyed throughout its course in the Puy-de-Dome all the manufacturing and agricultural produce shipped for exportation, consisting of wines, coal, timber for building, and boats. The sugar refinery of Lavour has been completely carried away, together with the extensive out offices, twenty-five head of horned cattle, and thirty sacks of wheat; the proprietor was with difficulty saved in a boat brought to him by an attached friend. The residence and property of M. Onslow, although situated on a rising ground, has suffered considerably. At Roanne 33,000 pieces of wine and 3000 hog-heads of spirits of wine, valued at a sum of 2,000,000 francs, have been lost.

Amongst the disasters caused by inundation, we shall cite the following:—

A merchant who was in the country, but whose urgent business called him to Paris, took the road to Romorantin, in order to reach Orleans. When he arrived at La Ferté St. Aubin, four leagues from the Loire, he was stopped by the flood. Hoping that the passage would be more easy over the bridge of Beaugency, he proceeded to that town. There the scourge had inflicted the most dreadful ravages. Having perceived a small boat with four men, he made signs to them to approach. This boat had been during three days employed in conveying food to those who had survived the inundation. Having been received in the frail craft, he was enabled to observe the ravages committed by the overflow of the waters. He saw beds, tables, chairs, carts, hay, corn, and animals floating on the flood, which had a few days previously occupied the surrounding farms. Having heard cries of distress, the boatmen proceeded in the direction whence it proceeded, when they found an unfortunate woman clinging to the branch of a tree. When she could speak, she told the boatmen that when the family were surprised by the flood, her husband, herself, and their son took refuge in the branches of the poplar tree, but the child having fallen from fatigue, the father whilst endeavoring to save his son, perished with him. The boat thence proceeded to where several persons remained blockaded by the flood in the upper part of the houses, to whom the boatmen supplied bread. At about half a league from the river, a farm-house, with some acres of land, was observed which had escaped the waters. The boatmen approached this point, and immediately forty people advanced to demand assistance. The boatmen aware that a fourth of such a number would swamp their boat, stopped at a certain distance. Cries and imprecations were then heard. "We are three days here," said they, "and no boat has come to our assistance. We have already suffered from hunger, and we have but one loaf remain ing." It was impossible to go to their relief; the boatmen had exhausted their provisions, and they would not approach. Four of these unfortunate men then rushed into the water, and the boatmen pulled off as quickly as possible, but the four men, whose strength was doubled by the peril to which they were exposed, succeeded in reaching and in taking refuge in the boat. This overweight had nearly proved fatal to the entire party. The boat sprang a leak, and it was with great difficulty, after staunching the leak with hemp, that they succeeded in reaching the land.

The *"Presse"*, announces that the Minister of Commerce had received the reports on the crops which he had demanded from the prefects.

Those reports mention that the wheat crop was in amount one fifth inferior to that of ordinary years, but that the excellent quality of the grain reduced the deficit to one tenth. France consumes 60,000,000 hectolitres of wheat annually; she consequently only requires 6,000,000 hectolitres to supply the deficiency, or a month's consumption.

We have more than once referred, but with extreme regret, to the sufferings of trade and of the population of Paris, and we lament to find our information more than corroborated by the papers before us. The *"Reforme"* says,—

Bankruptcies are of daily occurrence in Paris. Petty merchants continue to shut up their shops; the pawnbrokers' offices are besieged with applicants; the savings banks will soon be empty; the hospitals are crowded; 115,000 indigent depend upon public charity in Paris; the prisons are full, and the winter will throw about 100,000 workmen out of employment. Our prospects are indeed very sad.

Letters from St. Petersburg state that the Russian government has received

the protest of the British cabinet against the marriage of the Duke de Montpensier with the Infanta of Spain, and has regarded it favourably. It appears that the Russian cabinet is determined to march in the same line with England in this affair, and to rely upon the treaty of Utrecht. We know that on a recent occasion, respecting the affair of Sleswig-Holstein, the official journal of the French ministry pretended that the treaties of Vienna were alone obligatory, whilst all other treaties had fallen into disuse.

The Bey of Tunis, Ahmed Pasha Bey, who is shortly to visit Paris, is forty years of age. He succeeded his father in the regency of Tunis on Oct. 10. 1837. He is married, but without children. His mother was a Christian. She was taken to Tubarque with the Genoise colony established there, and being carried to Tunis, she changed her religion, and married Mustapha, Ahmed's father. This woman enjoys in the regency the utmost consideration, and possesses much influence in the management of affairs. She owes this importance more particularly to the veneration which her son feels for her. The Bey is accompanied on his journey by several personages of his court, amongst the rest is Kasnader, a young Greek; his Highness's brother-in-law, and M. Raffa, his interpreter, and councillor of state.

GIBRALTAR.—We learn that the new works at Gibraltar are going on with surprising activity. Nothing can exceed the energy of the governor in pressing on their completion. He is at the works at five o'clock every morning, where he personally inspects everything. There are about 1000 convicts employed. It would appear that the new waterline batteries are of the most formidable description. The effect of the guns, a *fleur d'eau*, must be terrible.

Royal Spanish Amnesty.—Her Majesty the Queen of Spain has granted the following amnesty on the occasion of her "happy marriage":—

Art. 1.—I grant amnesty to all those who in consequence of the political events which have taken place in the Peninsula and in the adjacent islands, up to the date of the present royal decree, find themselves actually expatriated under trial, or condemned for having taken part in the said events, and who shall be comprised in the following categories:—In the military class are included in this act of pardon all individuals from the rank of colonel inclusive and under; in the civil administration, all the chiefs of provinces, to whatever branch of the administration they may belong, and all the other employes of the lower categories; and in the class of private individuals all those who shall not have been members of revolutionary juntas, or who shall not have exercised under their authority the functions of political chief, intendant, commandant, general, or any other analogous employ.

Art. 2.—Individuals not comprised in the preceding article will be successively admitted to the same favour, according as the circumstances of each particular case will permit it, and by special declarations, which I reserve to myself to make.

Art. 3. Individuals expatriated may, in virtue of this declaration, return into the kingdom; those who may be prisoners, or condemned, shall be immediately set at liberty; and without expense release the classes of the land and sea forces from the increase of service which has lately been imposed on them.

Art. 4. Military men comprised in this amnesty are to remain until further orders in the class of persons retired from service, as well as they to whom, for special motives, an unlimited leave of absence has been accorded. Civil officers are to remain in the class of officers who have been allowed to leave the service.

Art. 5. Such persons as are expatriated for having in the civil war served the cause of Don Carlos may return to the kingdom, if they belong to the classes designed in Art. 1. of this royal decree, and if they previously, before the respective Spanish agents and consuls, take the oath of fidelity to our person, and to the constitution of the state. Individuals belonging to the highest category will be admitted to the same favour, on condition of taking the same oath in the manner and form pointed out in Art. 2.

Art. 6. It is to be understood that individuals of ordinary misdemeanors are not to be comprised in this amnesty, which cannot cause any prejudice to the rights of their parties.

Art. 7. My respective ministers will propose the measures necessary for the execution of the present royal decree, and in order that these enactments may not in any way compromise public authority.

Given at our palace, this 17th day of October, 1846, and signed by the Queen's own hand.

Another decree of the same date, countersigned by the ministry of justice, accords a pardon to all prisoners, except the usual exceptions in such cases.

The French and Spanish Alliance.—The Paris papers are more occupied with the dreadful inundations which devastate France, than with foreign or domestic politics. Nevertheless, it appears that