

dear atmosphere is a great advantage, especially for grape culture, as the extreme heat in summer causes vegetation to grow rapidly and matures fruit in a short season, and gives the fruit a better flavour and which gives the fruit a better flavour and which gives the fruit a better flavour...

Q What are the disadvantages of growing grapes here? A There are few enemies to the culture in Quebec than any of the great grape districts that I am familiar with. The principal disadvantage is that the public do not understand that grapes and small fruits can be grown here on a large scale in this country, as the seasons are so short, the varieties that will grow here are limited, and it is therefore necessary to select the earliest varieties, which are equal in flavour and quality to any produced in the United States...

THE IMPERIAL BUDGET.

London, 4th.—Gladstone said the expenditure last year was £33,810,000, or £11,000 less than the estimate. Surplus revenue over expenditure was £933,000. The time had now arrived, he said, for proposing the conversion of short annuities into longer annuities. He proposed to pay off £60,000,000 in 25 years. He estimated the expenditure for the year just commenced at £34,708,000, and the revenue at £34,990,000, which would leave a surplus of £1,282,000. He proposed to take a penny off the income tax and apply a small sum to the construction of barracks. These measures, he said, will consume the whole surplus and leave a deficit of £275. The extra penny of income tax which is to be remitted, produced last year about £1,000,000. Gladstone proposed usually to reduce the duty on silver plate by 3d. per ounce until the whole duty of 18s. disappears (this duty has been considered a great grievance by silver-plate makers), and to replace variable duty on the different kinds of foreign spirits, by one of 4d. on each gallon of standard spirits of all kinds. He expects this will produce an increased revenue of £180,000. He proposed various changes in private legacy and succession duties but nothing of a very sweeping nature. He said the anomalous nature of estimates with this subject could only be straggled with when the law of finance was dealt with. Gladstone concluded by stating the final result of all changes he proposed would be for the year just commenced an estimated surplus of £785,000.

After a short discussion on Gladstone's statement, the resolutions forming the budget of the bill to give effect to the budget proposals were agreed to.

THE IRISH LAND BILL.

London, 6th.—It is expected Gladstone's speech, introducing the Land Bill to the Commons to-morrow, will occupy three hours. It is anticipated the bill will provide, under the head "Sale of Tenures," that every tenancy shall first be offered to the landlord, and the landlord may prohibit the sale of the tenancy where reasonable grounds exist. The question of reasonable grounds may be referred to a land court. Where the landlord proposes to raise the rent to equal a purchase by the tenant the latter may sell and shall be entitled to receive and demand from the landlord a capitalisation equal to ten times the amount of the increase demanded. The sale of a tenancy bars a claim to compensation for disturbance and improvements, and a recipient of such compensation has the right of sales. Where the tenant devotes interest to his children or other persons, only one of the devisees shall occupy the tenancy, the object being to prevent subdivision, contrary to the wishes of the landlord. When the tenant accepts an increased rent proposed by the landlord, the tenant may not be disturbed for fifteen years, during which period there shall be no eviction or compulsory increase in rate, except as a consequence of a breach of certain statutory conditions. If the tenant declines the proposed increase he shall, if he sells his holding, be entitled from the landlord to ten times the amount demanded by the increase. Statutory conditions which bind the tenant as above, are for actual payment of rent, a guarantee against subdivision of the tenancy, a prohibition to sublet or divide without written permission from the landlord. The limitation in the Land Act of 1870 of compensation for disturbance to £250 will be replaced by a sliding scale. Where the rent is under £30 the compensation will be seven years' rent; where the rent is under the foregoing amount five years' rent; where the rent is £100 or upwards, not exceeding three years. The Act of 1870 will be further amended to fully protect the tenant's rights for compensation for improvements where the tenant surrenders to a new tenant at the landlord's wish, or takes a different holding. The Act of 1873, relating to compensation for improvements on eviction by title as paramount is amended. What is a fair rate may be decided by the court on application of the landlord and tenant from time to time during the continuance of the tenancy, but the court's decision will have no retrospective effect. When the court has fixed the rent there is

to be no disturbance for fifteen years. These periods of fifteen years security for the tenant occurs frequently in the bill, and is constituted a statutory term, which must expire before a new term can begin or new proceedings be had. The County Court is invested with jurisdiction to meet cases where the landlord and tenant act towards each other. It may punish the tenant for refusing to accept the terms the court thinks reasonable; it may enable the landlord to resume the holding by ordering the tenant to vacate his interest. Where the landlord and tenant agree for a longer tenancy than 15 years, the court will enforce the agreement and protect it as if it were for a statutory term. Where present tenancies are converted into fixed tenancies the rent shall be subject to re-valuation by the court at intervals of not less than 15 years, and the tenant shall not be evicted except upon a breach of statutory conditions. The owner of an estate may exercise rights as though he were the absolute owner, except he may not give fixed tenancy without the sanction of the Court of Appeals, will be from Civil Court to Assizes, and in special cases to Superior Courts. In Dublin parties may arbitrate on agreement. The machinery of the land courts will chiefly lie in the hands of the committee. The second bill amendatory of the act of 1870 relates to the purchasing powers under the British Coal Act.

London, 4th. The Daily News says it is informed that the statements purporting to give an account of the Land Bill are incorrect in several important particulars. They strongly resemble one of the various drafts which was considered by the Cabinet. The News understands a strict inquiry will be made regarding the identity of the person guilty of the breach of confidence by which the document was made public.

A NEW FOOD FISH.

The United States Fish Commissioners last year began their experiment of distributing young carp all over the country for use in bodies of quiet water. The young fish were from ponds near Washington, and were originally brought from Germany. To learn why carp is chosen in preference to some of the more valuable food fish, and to ascertain the distribution of carp for the spring, a San Francisco reporter visited New York State Fish Commissioner Eugene O. Blackford, in Fulton Market.

"The European carp is what we are trying to introduce," he said. "It is the most popular fish in Germany, and carp in beer is a favourite dish in Berlin. Over 500,000 pounds of this fish are sold annually in that city; so, you see, its flesh must be of very fine flavour. Carp grows very rapidly, and are in that way very profitable to the breeder. You know the people away from the seaboard in the Northern States have for their fish only salt codfish, mackerel, and dried herring, and they will gladly welcome the carp."

"Is this fish adapted to Southern water?"

"Yes, it is. But it thrives also—not so well, however—in the Northern and Middle States. It is calculated to supply the wants of Southern people in particular. First, because trout, bass, pickerel, and muskellunge cannot live very far South—it is too warm for them to keep alive in the lot number; and, secondly, because small ponds and small lakes, the natural home of carp, are scattered all through the Southern and South-Western States. Carp delight in still water, and the sportsman can't expect much fun in catching them. They are uncouth catching, and are difficult to take in nets. Yet they are the easiest fish in the world to raise, and the most profitable. They are gregarious and not voracious. Hence they will eat anything that is given to them. Their food is procured at the least possible expense, when it is necessary that food should be given them, which is not always the case. The carp can be fattened on peas, beans, coagulated blood, and curd, and they eat easily sublet on fungus, vegetable matter, and other substances at the bottom of ponds. Food is a small item of expense. It is hardy and grows fast, and is a good fish, if not better, eating than any fish we have."

"When did the carp first come here?"

"The first that we know of them is in the lakes of middle and southern Europe. The scientists as far back as Aristotle's time knew of them, but did not esteem them very highly. They have been, however, then transferred to lakes in Europe, and are now very popular."

"What is their appearance?"

"There are two kinds of carp. There are the German carp, the carp proper, called by the Germans 'goldkarpf,' and the leather carp, or 'spege karpf,' also from Bohemia. The carp proper has a sucker mouth, and lives by sucking the olive brown colour above and yellowish beneath. The leather carp is so called because it has only three rows of scales from head to tail. There is not a single scale in our waters, and it is really beautiful when taken fresh from the water, with its broad bronze scales or mirrors flashing in the sunlight. The leather carp or carp proper has small, thin scales. The leather carp has one row of dark scales along the back, and all the rest of the body is a leather coloured skin. All these carp are very hardy, and you can carry them any distance in a rag or in a bucket, if you will only keep them moist. Nothing just now is of so wide spread interest in fish culture as carp raising.

Every farmer or retired merchant who owns a pond wants to go to producing carp."

"How large do they grow?"

"They vary in size from six inches to two and a half feet in length and from a pound to eighteen pounds each. They are in season for eating from October through the winter and to April. From Georgia comes an account of the largest carp yet grown in America. Mr. K. Witrowsky, in Atlanta, in cleaning out a pond in which he had put four little carp a year ago, that were then two or three inches long, found that these four carp had grown to be twenty, twenty-two, twenty-four and twenty-five inches in length and the twenty-five inch one weighed seven pounds. Now, you will see the rapidity of the growth of this carp when I tell you that a brook trout requires two years to years to grow to half a pound. To speak of a carp nearest home, a gentleman recently showed me two carp that grew in a pond near Brooklyn from half an ounce to two pounds in ten and a half months."

"Is it necessary to make elaborate preparations for brooding them?"

"Marsh and water lands are easily prepared for the culture of carp. An acre devoted to this purpose is the most profitable investment that a farmer can make. It is a curious fact that farmers washfully and intelligently cultivate their land with both capital and labour, but they uniformly neglect the sheets of water on their estates. If they should take the trouble they could so 'carp, two, three, and more years old that might alone be a means of support when their land crops would be damaged or spoiled on account of too hot or too dry seasons. To raise carp a number of ponds are required, viz, one for young fry, one for the growing carp, and one for wintering the carp. The two former may be shallow; the latter must be eight feet or more deep. This is in order that the carp may burrow in the bottom of the pond. The hatching pond should be from a quarter of an acre to two acres in extent, and two to four feet deep. From two to three spawners and one or two millers are necessary, to which should be added a one year old miller, weighing half a pound. If carp have good water, a clayey and rich bottom, and are not too much crowded with other fish, they will weigh upwards of two pounds in the autumn of the third year."

"How far have the New York State Fish Commissioners distributed these fish?"

"The most important fish distribution has been done in tanks in Fulton Market during the last three months. We have distributed from 4,000 carp about the size of a large steel pen in lots of ten to twenty to any applicant who has ponds or waters adapted for brooding and raising. The distribution ended on Feb. 18, and we are now receiving from five to ten applications daily. These applications we put on file, and when we distribute carp again late in the spring they will be attended to. We have sent fish west to Chicago and south to Florida, but the bulk of the fry was sent all over this State as far as Rochester and all through Long Island. Carp have been sent from Washington all over the United States. Much concern has been felt lest the late rains had washed the carp out of the ponds at Washington, but recent despatches say that they are all right. By April 1st there will be at least 1,000,000 young carp from an inch to six inches in length to be distributed."

"What are the carp's enemies?"

"They are black bass, pickerel, sunfish, and all carnivorous fish. Pickerel and brook trout eat their own young, you know, and they can't be expected to spare young carp. As to brook trout, they are particularly voracious. A brood fry who is to lose 10,000 trout fry and expect to find 10,000 large trout in his pond in four or five years will be lucky if he finds 500 trout. They eat one another up. A pound trout will eat a half pound trout, and sometimes, if very hungry, will pitch into one of its own size."

"Is anything really known about carp in this country?"

"No; genuine carp are not known. The Germans are enthusiastic about them. Spanish, mackerel and striped bass are superior in flavour, but carp equal in delicacy the salmon trout in our lakes. In two years from now, genuine carp will be found in our markets in abundance. At the coming dinner of the Fish Cultural Association, the edible quality of the carp will be discussed. One thing is certain, this fish stands in the same relation to other fish that domestic fowl does to other birds."

REVOLUTION IN PAPER MAKING.

I am struck with the great change that has taken place in paper mills within my recollection. I think I can remember the time when there was not a paper mill in the United States; at all events, there was not a paper machine running in any mill of which I had any knowledge. My earliest recollection runs back to large rooms filled with great vats, and with men standing beside them and dipping out paper of the required size upon a mangle, passing it over a cruet, and then to let it dry by, and by that slow and tedious process making out a day's work. I dare say that the entire paper product of the country in those days was less than the amount that is turned out by a single mill that could be named to day. Almost everything, every department of the mill is changed. There were no chemical used in paper

making in those days; now paper mills are great chemical laboratories. There is scarcely anything in a paper mill today that was in it the early days of its rather revolution. And what is true of the paper mill in that particular is true on a larger scale of every department of manufacture, and it is of the very highest importance for us in America to bear in mind the fact that during the last fifty years the arts have been substantially re-born—reborn. Scarcely any department of manufacture is conducted today by the processes that were in vogue fifty years ago. I had occasion a few years ago, half a dozen years ago, to be in London and had the honour of attending the paper makers' dinner given in that great city at which were gathered a large representation of the paper manufacturers from the different parts of Great Britain. In a few remarks that I had the honour to offer, I ventured to mention that paper making in the United States was carried on to a greater degree than anywhere else in the world. I saw on the countenance of the gentlemen assembled around the board a smile of incredulity, and it was entirely respectable, yet it implied that I was carrying out the usual Yankee idea of boasting of what we are and what we are trying to do, but I said: "You can readily see that this is so; if you carry back your recollection, you will see that you do not make paper now as you did in early times. There is scarcely a paper mill in England making paper now as it did half a century ago. If that be the case, there can be no great value in what is termed hereditary, transmitted skill, because if the process is new since we commenced manufacturing, of course, according to the present processes, we are as old in the art as your are." And I had the opportunity to show to some of them samples of American paper which I had brought with me, and on the day following they admitted that they were equal to anything that could be produced in Great Britain.—A. H. Rice

ON THE RUSTING OF IRON.

Dr. T. J. Philson sends the following note on the rusting of iron to the Chemist News: "A correspondent asserts that in making some photographic experiments he found that iron and steel do not rust when immersed in solution of caustic soda and caustic potash, but he appears to have been unable to discover any explanation of the fact in the books and journals to which he has access. 'I cannot understand it,' he says, 'why the alkali in the solution prevents the oxygen in the water acting on the iron or steel.' The fact has been known for a great many years, and the true explanation was pointed out, I believe for the first time, by the late much regretted Dr. Glance Calvert, to whom modern chemistry is indebted for much useful work. Dr. Calvert's explanation is in strict accordance with the theory propounded some years previously (1858) in my paper on catalytic forces. His experiments showed that the phenomenon of the rusting of iron was due to the presence of carbonic acid, this body forming the third substance requisite according to my theory of catalysis to complete the galvanic chain. Without the presence of this carbonic acid, or some third substance capable of taking its place, the oxygen cannot combine with the iron at ordinary temperatures. A high temperature acts like electricity in promoting the combination. As long as there is free caustic alkali present, of course there can be no carbonic acid, and no rust is formed."

GLASS EYES.

A reporter of the Chicago Inter Ocean has been investigating the trade in glass eyes. From the leading dealer in the west, a firm which has sold glass eyes for many years, he learned that there were as many as a thousand wearers of them in that city, and that from 500 to 800 eyes are sold there every year. The best eyes are made at Uri, in Germany, the manufacture centring at that place on account of the occurrence there of fine silicates and other minerals needed in the business. The German eyes withstand the corrosive action of tears and other secretions better than those made in France. At Uri are also made vast quantities of eyes used by taxidermists in mounting birds, animals, and other natural history specimens, besides a superior quality of glass marbles, known to boys as pebbles. The artificial eye is a delicate shell or case, very light and thin, and concave, so as to fit over what is left of the eyeball. The shell is cut from a hollow ball or bubble of glass, the iris is blown in, and then the whole is delicately reconstituted. The trade in Chicago has undergone a curious change. Twenty years ago there were sold very many more dark eyes than light, but from that period on the sale of dark eyes has been perceptibly dying out. Now nearly all are light eyes, say twenty light to one dark. In Boston the percentage is even larger, about thirty-five blue or light eyes to one brown; while on the other hand in New Orleans fifty brown or dark eyes are sold to one light. Regarding the change of colour in Chicago of course the fashion has nothing to do with it. No one has yet decreed that party coloured optics shall be the rage. The change simply shows that the influx of population has been from the east principally and from northern Europe. Surgical operations are performed much more skillfully than formerly. Time was when it was deemed necessary to take out the eye entirely. Then the artificial eye became a steel, glassy, staring

object. Now amputations of portions of the eye can be performed in very many instances, and the glass eye fitted on the stump, which moves quite naturally. Sometimes those who have lost an eye will keep two or three artificial substitutes. They will use one for the day-light with a small pupil, and another for night-time with a large pupil to offset the dilations.

AN ECCENTRIC INVENTOR.

By the death of Col. Roberts, of Titusville, Penn., the United States has lost one of its most successful inventors. His name has been chiefly connected with the nitro-glycerine torpedo, which he devised as a means of increasing the yield of petroleum wells, and from the use of which he is said for several years to have received an income amounting to one or two thousand dollars per day. But this, though the most remunerative, was only one of his inventions, and at the time of his death he was engaged in the construction of a locomotive, which he thought would run with perfect safety at the rate of 100 miles an hour. Although wonderfully clever in the invention of money making contrivances, Col. Roberts' early experiences had not fitted him to make the most judicious use of his readily won wealth. He had far too much native shrewdness to be a second "Cool Oil Johnny," when the royalty from this torpedo patent poured a steady stream of money into his pocket; but, none the less, he spent large sums in a manner more commendable to his local patriotism than to his good taste. One of his outlays was the building of a large hotel at Titusville, and upon its completion parties were taken at the Colonel's expense from various parts of this State and Pennsylvania to see this remarkable structure. Col. Roberts' own bedroom was a wonder of misdirected art. The head board of the bed, many feet in height was a mass of fanciful wood moulding, while the pillow shams and counterpane were constructed from the finest point lace. It was the Colonel's delight to have his male and female guests assemble in this room, admire its gorgeous decorations, and drink champagne with him. Later on, this hotel, or its management did not please him, and although it was fully up to the needs of Titusville, he planned another hotel, which, when completed, he intended to run in opposition to his first venture. Col. Roberts had been the object of so much flattery and subservience on account of his wealth that it is not strange that he partly fell into the notion that money could purchase anything. A conviction bordering upon this opinion seemed to colour a great deal that he said and did, and hence his manners were not always pleasing to those who were blessed with a sufficiency of self respect. Had he lived a few years longer he would undoubtedly have played his part on a wider stage, and the new intercourse might have ground off some of the dictatorialism which a provincial experience gave to him.

It is noteworthy that a group of States with less than a third of the population of the country produce five-eighths of the corn supply of the United States. These are Ohio, Indiana, Illinois, Iowa, Missouri, Kansas, Nebraska. In 1849 the corn grown in the State of Illinois amounted to 57,848,984 bushels; but in 1877 the quantity had risen to 200,000,000 bushels.

Here are some first class frauds in the shape of mining companies, organized and put on the Philadelphia and New York markets by one Major J. W. Bonta, erstwhile of the above cities and Leadville: Eagle Smelting and Silver Mining Company, the Silver Glance Con. Company, Sulphurets Company, First National S. M. Company, and the Del Monte of the Gold Medal awards. Anybody who has invested money in the stocks of the above companies can consider they are just that much out of pocket. Taking that view of it, which is the correct one to a dead moral certainty, will settle their mind, and expectations, so that they need have no further trouble about it, unless to sue somebody for getting money under false pretences. Bonta is the man that launched the Scooper awards on Philadelphia, which the old original admits was sold with his knowledge in order to effect the sale at enormous figures.

Before the Leadville carbonate era had been pretty well advanced, Colorado's leading mining districts had been Ulipin and Clear Creek counties. They had given most of the mining product of the State and territory before Leadville's time, and give a larger yield (combined) at the present time than then. But the increase is not rapid, the mines and their mineral veins being of that character that bonuses of the Fryer Hill or Comstock also are not the nature of things. It is more like regular established business that can be counted on for about so much revenue, large or small, according to the character of the vein, varied with considerable improvement at one time and the reverse at another. They are sure enough of profit to cause the business men of Georgetown and Central City, who have watched the record of the mines for years, to operate or become interested in operating them. That is one reason why few properties of these localities are offered for sale at the N. St. These adjoining counties, the smallest in Colorado, have given a compound yield of \$37,000,000. Their present output is between four and five millions per annum. Of the past product about two-thirds was gold.