

On the Farm.

IRRIGATION IN INDIA.

Nowhere is irrigation accorded more attention than in India. The nature of the climate and the inequalities of the rainfall make irrigation necessary. Much of the work is under the direct control of the government and vast sums of money are required in keeping the reservoirs and canals in best condition. The storage of water in tanks for irrigation purposes is very common in southern India, while canal irrigation, in which the water is drawn directly from the river, has been practised on a larger scale and most successfully in the northwest provinces, the Punjab, etc.

In Madras presidency alone there are 60,000 storage tanks, varying from the small works formed by earthen embankments, to costly reservoirs constructed by government and having a surface area of 6,000 to 8,000 acres. Canal irrigation takes water from rivers arising in lofty mountains which can be depended upon for unfailing supplies. In tank irrigation, on the other hand, the supply of water is more or less dependent on local rainfall, either directly or through the medium of the smaller rivers which dry up in hot seasons. In addition to these two systems there remains the method of irrigation more extensively used in India than any other, viz, that by wells, and these do not come directly within the scope of the operations of the public works department.

A recent official report shows a total of 41,000 miles of main canals and distributaries. The crops to which irrigation is most extensively applied are wheat and rice. In a recent year 300,000 acres of rice crops were saved from entire destruction in Bengal by these canals, and the absolute necessity of irrigation is not less prominent in other parts of India.

COST OF PRODUCTION.

In a well-regulated shop or factory the exact cost of each article produced is known, and the ruling prices at which such products are sold, are also known; consequently the profit or loss on each article is computed and the manufacture of different articles is continued accordingly, says a writer.

How many farmers know the exact amount each pound of pork, beef or mutton costs when ready for market? In a herd of a dozen cows, who knows how many, if any are kept at a profit?

Nearly every farmer raises more or less poultry, yet how few have any exact knowledge of the costs or receipts from this branch of their business.

It is not extravagant to say that no other business in the whole range of human occupation is conducted with such utter disregard of true business methods as farming. Therefore, I contend that a thorough business education is one of the indispensable requisites for the successful farmer. While it is of the utmost importance that a farmer should have a thorough all round education, that he should be an intelligent man of affairs, and that he should be a thorough business man, applying to his occupation all the accuracy and good judgment required in any other calling, yet the third phase of his education which I may call professional or technical training, is not less important.

FRENCH AND ENGLISH DRESSED POULTRY.

Some English dressed poultry, turkey, ducks, etc., at the cattle club show, Smithfield, Eng., is well brought out in the illustration. This with our frontispiece affords a contrast in manner of preparation and staging. Although the English birds were a fine display, many of the English poulterers are willing to admit that they have something to learn from their French rivals as to style and quality of dressed product. The British consumer, however, sticks loyally to his demand for home grown poultry, and the result is that thousands of French, Italian, Canadian and American fowls are regularly palmed off as best English. A story is related of a man who went to a prominent English market to buy a Norfolk turkey, and he was offered an Italian bird, one of a consignment, which, in the course of his official duties, passed under his notice many hours before when judging the exhibits at a poultry show.

The chief peculiarities of the English methods are: Killing by wringing the neck, not by chopping or sticking; feathers are left on the neck for a few inches from the head, also a few feathers on tail and tips of wings; the breast bone is sometimes broken down by pressing it to one side with the thumbs, and the wings are twisted to the back of the bird. These points should be observed in preparing poultry for export.

CULTIVATION FOR PEAR ORCHARD

The system commonly practiced some years ago was that which was applied to the apple, but on account of the destruction caused by the pear blight, and owing to the fact that the pear blight flourished most in varieties which made a vigorous rank growth and produced a large quantity of sappy wood, it has been found to be

not well suited. Pears with a firm determinate growth are less affected than those of luxuriant growth. A study of these facts has brought about a revolution in methods of cultivation. The most successful and profitable pear orchards in Ontario at the present time are those which are cultivated by sowing clover under the trees.

The clover is not removed from the ground at any time of the year. It is cut and allowed to lie and decay upon the ground, and in this way to act as a fertilizer. When an orchard is being cultivated the practice is to sow the clover in July. By early autumn it has grown 10 or 12 inches, and affords a covering for the ground during the winter. It is cut at blossoming time the following year. It returns to the soil a sufficient amount of nitrogen, which is so material to the healthy growth of the tree. Potash must also be applied in some form of commercial fertilizer, or in wood ashes. The orchard is kept in a clover sod so long as the trees are growing satisfactorily.

A SAFE ESTIMATE.

A year has 365 days, and a hen or laying pullet utilizes 100 days in moulting, etc., leaving 265 days. Some breeds also hatch and raise chicks. Like famous cows with 15-lb butter records, there are some very prolific pullets, but they are exceptions as individuals, and do not comprise the breed. One would be fortunate if 100 hens laid 100 eggs per hen during a year, as everything depends on management. There will be sick hens, over-fat hens and very inferior hens. It is a good hen that will lay 4 eggs a week for 265 days, about 38 weeks, or 152 eggs, and where one hen may do this many others will not. An average of 120 eggs a year for a large flock is a good one.

RICE GROWING IN RUSSIA.

Under a steady increase in the production in recent years there are now five rice cleaning steam factories in operation in Russia with an annual production of 48,000 tons. An additional factory is now in the course of construction, which will be supplied with the most improved machinery. The Russians commenced cultivating rice in the early '80s; it was almost unknown in the interior up to '86, the supply being imported from India and subjected to a high duty which confined its use to the wealthy classes.

PROTEIN FEEDS FOR HOGS.

In some German tests with pigs to determine the advisability of feeding large quantities of nitrogenous material, a ration of peas, beans, barley, wheat bran, lupines, peanuts, with a little milk and buttermilk, produced gain at a cost of 9 1-2c per lb. These results abundantly demonstrate that feeding hogs almost exclusively on nitrogenous foods is unprofitable.

SLOP FOR GROWING PIGS.

To a quart of shorts and a spoonful of oil meal scalded with a gallon of boiling water and stirred until thoroughly cooked, add milk. This makes a fine slop for growing pigs.

SCIENTIFIC TRUTHS.

Which the General Reader Can Skip if He Desires.

Cast iron is now being used for stills for concentrating sulphuric acid, and it is confidently anticipated that it will supersede both gases and platinum for that purpose.

A mixture of a quart of methylated spirit with about a quart of glycerine is said to keep shop windows from becoming obscured from the condensation of water vapour from the atmosphere of the shop.

Probably the most inflammable among substances which are not spontaneously inflammable is phosphuretted hydrogen, PH₃. The heat of a thin glass tube containing boiling water is quite sufficient to ignite this gas.

M. Ducretet, an able French worker at the wave transmission of electricity, has produced the following effects by means of the Hertzian undulations. He has raised a long metal wire to a red heat, started an electric motor, excited, made magnetic, a powerful electromagnet, lit up a row of incandescent lamps and exploded a mining fuse.

Nernst of Goettingen, has invented an incandescent electric light in which the filament is of the same material as that used for the mantles of the incandescent gaslight. The production of the necessary temperature requires a smaller current with the new filament than with the carbonized filaments already in use, and there is no need to have the filament in a vacuum.

The reduction of metallic oxides and sulphides by means of a finely-divided aluminium or magnesium, or even calcium carbide, is attracting much attention at present. The great advantage gained by smelting ores in this way is that an enormously high temperature is produced by the reaction, so that external heat is only needed in order to start the thing.

It having been alleged that acetylene is not injurious to human beings when accidentally and occasionally present in the air which they inhale, Signori Mosso and Ottolenghi have been making experiments in the fond hope of deciding the question. Unfortunately they have only experimented with dogs, so that sundry unhappy canine vertebrates have been sacrificed to a very little purpose. It is impossible to argue from dogs to men. Any experimenter possessed of any useful knowledge is aware of the fact, for example, that dogs can with impunity drink impure water which would rapidly have more injurious, or even fatal, effects on the human constitution.

THE NEWS IN A NUTSHELL.

THE VERY LATEST FROM ALL THE WORLD OVER.

Interesting Items About Our Own Country, Great Britain, the United States, and All Parts of the Globe, Condensed and Assorted for Easy Reading.

CANADA.

Berlin's Board of Trade advocates that town's incorporation as a city.

Edmonton, N.W.T., is to have a new roller flour mill of 100 barrels capacity daily.

The Government inspector reports that Montreal Civic Hospital is uninhabitable.

A pork packing factory is likely to be started in Woodstock by Perrin & Co. of Chicago.

Captain Woodside, a well known Canadian correspondent, is reported lost in the Klondike.

Application will be made next session for power to build a line of railway from Lake Winnipegosis to Edmonton.

The first of twenty-five new Grand Trunk locomotives has been turned out by the works at Point St. Charles.

The Leyland line will run a direct fortnightly steamship service between Antwerp and Montreal next summer.

Fifteen thousand gallons of rum, seized in Cape Breton, will be offered at auction in Halifax within a few days.

John McNamara, the Elizabethtown, Ont., boy injured in the Murray Hill wreck, has become violently and incurably insane.

The will of the late Lieut.-Col. Chas. Magill, of Hamilton, leaves an estate worth \$259,956, entirely to the family of the deceased.

The Hamburg-American Line is improving its service between Montreal and Germany, and will put new vessels on the route next summer.

Mr. Edwin Smith and Mrs. Ellen Matt, both of Fort Steele, B.C., were married on a mountain top in East Kootenay, on Nov. 27th.

The Department of Marine and Fisheries has been notified that American companies are taking large quantities of fish off the coast of British Columbia.

C. P. R. returns of cattle shipments show that 40,000 head were this year shipped from the North-west to Eastern Canada, 2,000 less than last year.

Four delegates, who have returned to Winnipeg from Minnesota, say that fully 200 families will move to North-west from Minnesota and Wisconsin next spring, and locate near Edmonton.

R. O. G. Thompson, an ex-mounted policeman, of Regina, while practising on a trapeze bar in the bowling alley at Fort Steele, B.C., fell and dislocated his neck. His arms are partially paralyzed.

A rich pay streak has been struck in shaft No. 2, Mikado mine, Lake of the Woods. It is said to be the greatest strike ever made in this district and runs about twenty thousand dollars to the ton.

Miss Booth, of the Salvation Army, who has just returned to Toronto from a tour of the Army's stations in the Maritime Provinces, will make a more extensive tour going to Newfoundland, early in the New Year.

It is said an action for damages will be brought against the Grand Trunk Railway by the young German emigrant, Frederick Cohen, whose parents were killed in the Murray Hill disaster.

Judge Johnston of Sault Ste. Marie has been presented with a handsome gold watch, the gift of his brother district judges, in recognition of his services as Secretary of the Board of District Judges.

The immigration branch of the Interior Department will shortly issue a ten-page atlas, which will be devoted to the presentation of the geographical and topographical features as well as the climatic conditions of Canada.

All the Deputy Ministers of Militia and Defence have been lawyers. Mayor Futvoje, the first deputy, was an English lawyer, the late Col. Panet was a lawyer, and that is also the profession of the new deputy, Mayor Pinault.

Mr. Charles H. Norris, who is in Ottawa on his way to New York, claims to have discovered a new gold country in the Yukon which will rival the richness of the Klondike. This new country is known as the Teoya district, and is reached by way of the Stikine River.

Kenneth Finlayson, son of one of the earliest finders of the Hudson Bay Co., who died recently the biggest land owner in Victoria is in trouble in Victoria. He was charged on Tuesday in the Police Court with embezzling \$1200 from the Dominion Savings Bank, where he was employed as clerk. Inspector Fraser says his speculations dated from February last.

It is reported in Ottawa that Connolly Bros., of Montreal, are the successful tenderers for the new Intercolonial Railway deep-water wharf at St. John, their tender price being in the neighbourhood of \$300,000. The wharf is to be over 500 feet long, and will accommodate the largest vessels at all conditions of tide. Messrs. Connolly are just completing a big contract at Philadelphia.

GREAT BRITAIN.

The year's output on the Clyde reaches the enormous total of 446,911 tons.

It is said that the number of British vessels wrecked during November was 82 causing the loss of 77 lives.

George Stone, an engraver, has been sentenced to be hanged at Hull, Eng., for the murder of Emily Hall.

Sir William Anderson, Director-General of the Royal Ordnance Factories and part inventor of cordite, is dead.

Negotiations are reported to have been begun between Russia and Great Britain for the solution of the Chinese problem.

Sir Alexander Gollan, British Consul-General to Havana, who is now in England, has resigned and will not return to the Cuban capital.

February 25th is the date fixed for the marriage of Mme. Adelina Patti to Baron Von Cederstrom, which will take place at Neath, Wales. Baron Von Cederstrom is about to become a naturalized British subject.

UNITED STATES.

Buffalo is now free from smallpox. Major-General Brooke has been appointed Military Governor of Cuba by Mr. McKinley.

The 18th annual convention of the American Federation of Labour is in session at Kansas City.

The steamer Alameda, at San Francisco from Australia, brought treasure amounting to \$3,510,000.

Four United States war-vessels, the Brooklyn, Texas, Castine, and Resolute, have been ordered to Havana.

The Cuban Evacuation Commission has recommended that an army of 50,000 men is requisite to maintain order in Cuba.

It is reported that Mr. Joseph H. Choate of New York will be the next United States Ambassador to England.

There was an epidemic of suicides in New York on Sunday. Three people took carbolic acid, while a fourth jumped into the river.

The lumber cut on the Aroostock river in Maine, this winter will be twenty-one million feet, which is in excess of the past year.

A purse of \$1,000 has been subscribed by Baltimore shipping merchants for the crew of the British steamer Vedamore, who saved 45 of the crew of the wrecked Londonian.

A verdict for \$10,500 damages has been rendered against the St. Paul, Minn., Street Railway Company. The complainant was A. D. Litten, guardian of Michael J. Reem, who had his foot crushed.

Gideon W. Marsh, former president of the wrecked Keystone National Bank, at Philadelphia, was sentenced three yesterday to 12 years and three months, and to pay a fine of \$500.

Mrs. Lulu Johnstone, aged 63 years, has been indicted by the grand jury at Perry, Ok., charged with murdering two husbands. She has been a widow seven times. The bodies of her two last husbands which have been exhumed were found to contain arsenic.

Kansas negroes are leading a movement for the deportation of 2,000,000 negroes to Cuba, Porto Rico, Hawaii and Africa. Petitions are being circulated, and will be forwarded to the Kansas delegation, praying for an appropriation by Congress of \$100,000,000 to carry out these plans.

Harry Sheffield is under arrest at Hot Springs, Ark., on a charge of murdering and cremating Mrs. Nellie J. Horn, a beautiful young woman who disappeared several weeks ago. Sheffield's brother, in whose house the crime is alleged to have been committed is also under arrest.

A riot occurred in the First District Police Court of St. Louis, during which Judge Thomas H. Peabody, on the bench, sat with a revolver in his hand while Attorney J. D. Storts, with drawn weapon, denounced the judge in unmeasured terms because of a decision he declared unfair to his clients.

The National Board of Trade, meeting at Washington, has adopted a resolution to the effect that the commercial prosperity of the country would be greatly promoted by the nearest practical approach to the establishment of complete reciprocal trade relations between the United States, Canada and Newfoundland.

GENERAL.

Prince Mirza, second son of the Shah of Persia, is in Brussels.

It is reported that the Duc d'Orleans is to ask the Pope for permission to divorce his wife.

Sir Thomas Upington, Premier of Cape Colony from 1884 to 1886, died at Cape Town.

It is reported that Russia has acquired a number of warships that are being built for Japan.

The Mexican Government has a scheme to fill up the vacant lands of that country with Spaniards from Cuba.

Gen. Ludlow has been appointed Military Governor of Havana by the United States Secretary of War.

The Swiss Federal Assembly has elected E. Mueller, of Berne, to be President of the Swiss confederation.

The imports into France during the last eleven months increased £17,393,960. The exports during the same period decreased £5,808,200.

By the explosion of a shell at Fort Constantine, at Cronstadt, Russia, nine soldiers were killed and three officers and seven soldiers wounded.

The story is revived that President Kruger of the Transvaal is ill and must go to Europe to consult a specialist on account of inflammation of his eyes.

A CHILD'S PHILOSOPHY.

Lord Crewe, at an educational meeting at Liverpool, told an amusing story of the little son of a friend of his who refused to say his lesson to his governess. He admitted that he knew it well, but, said he, if I say my lesson, what's the use? you will only make me learn something else. That child will probably be heard of again.

THAT IS WHAT HE MEANT.

He says he loves her for all he's worth, remarked Fangle. He means for all she's worth, added Cumso.

BRITISH COMMANDERS.

MEN WHO WOULD HANDLE THE NAVY IN CASE OF WAR.

The Names of Several Prominent Naval Men Suggested for the Command of the Reserve Fleet.

For the present interest centers in Admirals who would have executive commands of fleets if hostilities were threatened, says the London Daily News. Our naval forces in the Mediterranean are commanded by Admiral Sir John Ommamney Hopkins, who has been fifty years in the service, which he entered as a cadet at the age of 14. He was a midshipman on board the Sanspareil in the Black Sea at the beginning of the Crimean War, and saw much fighting there in ships of different classes. Since then his services afloat have been varied by important appointments at the Admiralty, and he was Director of Naval Ordnance at a time when the most radical changes in systems of armament for battleships were being brought about in spite of much opposition from some old officers who still believed in muzzle-loading guns, and would have none of the new-fangled breech-loaders, until public opinion, educated by scientific artillerymen of a new school, prevailed over prejudice.

With Sir John Hopkins as second in command is Rear-Admiral Gerard H. C. Noel, one of our youngest flag officers, who only joined the service forty years ago, and had risen to be a post captain at the age of 36. To this rapid promotion his scientific attainment contributed not less than his skill in seamanship and his faculty for administrative work. In dealing with the wily Turk he has recently displayed a determination against which neither affrontery nor cunning could avail aught, and sailors believe in him as a leader, whose pluck and tactical ability would be equal to any emergency.

THE CHANNEL FLEET.

Nearer home we have the Channel Fleet, commanded by Vice-Admiral Sir H. F. Stephenson, who is only three years older than Admiral Noel, and since he joined the service a boy of thirteen more than half his life has been spent afloat. He served in the Black Sea, and got the medal with clasp for Sebastopol while still a cadet. Two years later, as midshipman of the Raleigh, he was wrecked in the China Sea. A little later he was boarding junks in the Canton River. He landed with the Naval Brigade, under Peel, in India, fought in every engagement with the mutineers, and was thanked by both Houses of Parliament. After promotion to Lieutenant's rank direct from midshipman, he was sent in command of a gunboat to the Canadian lakes, and remained there until 1867. A year and a half later he was again wrecked in the Pacific off Japan. In 1875, as captain of the Discovery, he started on an Arctic expedition, but was back again in time to commission another ship for the Mediterranean, where he served at the bombardment of Alexandria and subsequent operations. Since then he has been captain of the Thunderer and Dreadnought, a rear-admiral and commander-in-chief of naval forces in the Pacific.

The second in command of the Channel Fleet is Rear-Admiral Brackenbury, one of a distinguished family. He commanded the Naval Brigade on shore during the Zulu War, and gained great distinction there. In the Egyptian War he was captain of a cruiser. A few years later, when serving under Admiral Fremantle on the East Indies station, he was sent to the Zanzibar coast, and landed with the Naval Brigade for a punitive expedition against the Sultan of Vita, and for his share in the operations, which were marked throughout by most admirable organization, he was specially mentioned in despatches.

THE RESERVE FLEET.

Selection for command of the Reserve Fleet now being brought together in our Southern ports will depend very much on circumstances. Under certain conditions Sir Compton Domville would be entitled to it, or at least, his claims could hardly be overlooked. He is a gunnery officer of distinction, but has little experience in handling a fleet at stern tactics. If the command were only temporary, and to last no longer than a short cruise, it might be given to a junior flag officer. Lord Charles Beresford would probably have been the nation's choice had he remained at home, but it is a far cry from China to the English Channel. If it were to be a Vice-Admiral's command, either Sir Compton Domville, Admiral Dale, or Sir Harry Houldsworth Rawson might be selected. We have, however, many young Rear-Admirals to choose from, in either of whom the "service" would place implicit confidence, and it would surprise no one to hear that an important administrative appointment had been given up in favor of sea service with the Reserve Fleet; but that could only happen if there were chances of hostilities, which happily seem remote at present. As to the efficiency of our fleets on distant stations, we need have no anxiety so long as Vice-Admiral Sir John Fisher commands in North American waters; Rear-Admiral Paliser in the Pacific; Vice-Admiral Sir Edward H. Seymour in China Seas; Rear-Admiral Archibald Douglas in the West Indies, and Rear-Admiral Hugo Pearson in Australia—all are sailors of distinction, and most of them have won promotion by gallant service.