

**MARITIME**  
**MINING RECORD**  
AND  
**COAL AND METAL TRADES JOURNAL**

Dr. R. Bell  
dent

*Cumberland. \* Pictou. \* Cape Breton. \* Inverness*

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New Series Vol. 12 No. 3 August 11th. 1909 STELLARTON, N. S.

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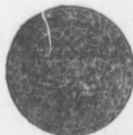
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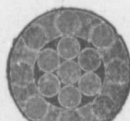
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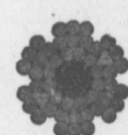
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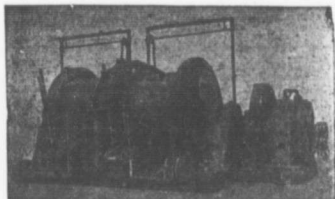
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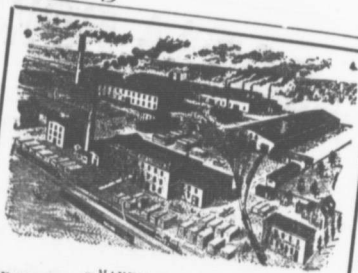
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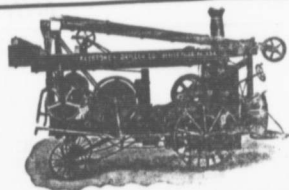
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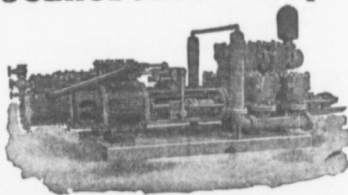
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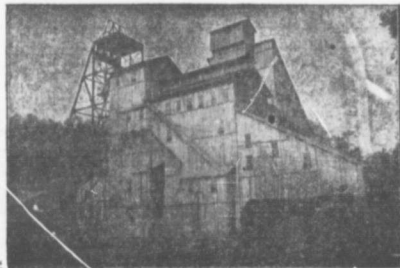
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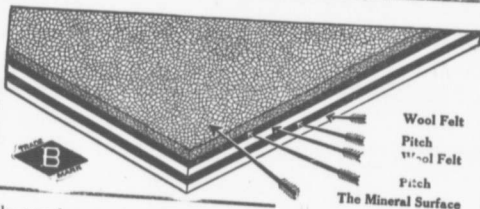
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To Ho....

## MARITIME MINING RECORD

Vol. 12, No. 3. Stellarton, N. S., AUG. 11 1909. New Series

## SELECTED QUESTIONS AND ANSWERS.

(Science and Art of Mining.)

## SAFETY IN MINES.

Q.—Describe briefly the points to be attended to in connection with safety in working at the face in long wall or other system of working.

A.—Several points require to be carefully attended to to produce the maximum amount of safety at the face. To endeavour to describe these fully would require more space than is allowed here, therefore, below will be found the chief points in as brief a manner as possible.

Timbering.—The majority of the accidents which occur in mines are due to falls of roof and side; to prevent these, systematic timbering should be employed. At the face the timber should be set at distances specified by the manager or at least distance if the conditions of the roof require it; the timber should also be withdrawn from the gob in regular order so as to allow the roof to break down, and thus reduce the weight of the face, with the exception of where packs are required. In withdrawing timber suitable appliances must be provided; the best one for this purpose is Sylvester's "pulling jack". In long wall work the packs should be kept well up, especially the gate packs. One thing to be specially attended to is that suitable timber is kept ready for use close to the workings.

Shot Firing.—In many mines shot-firing has to be resorted to to break down the coal. To produce safety in this, no one except the person appointed to fire shots shall attempt to charge or fire such. In the firing of shots the rules laid down in the Explosives in Coal Mines Order must be carefully observed as to the stemming, tools, testing for gas, warning persons, the firing of shots, etc.

Safety-Lamps.—Where safety-lamps are used, they shall be used with care so as to prevent injury to them, for it must be borne in mind that, however good a safety lamp is, it is only safe as long as it is in an ideal condition. The chief danger from this is:

1.—Injury to the gauze by being struck with the miner's pick.

2.—From the glass being broken, either by a direct or indirect blow, such as a blow from some tool, or by a nail flying and hitting the glass, or by a piece of stone etc.

By defective lamps being taken into the workings.

The above should be remedied by strict compliance with the Coal Mines Regulation Act as to safety-lamps.

Approaching Old Workings.—When known to be working towards old workings likely to contain accumulations of water, General Rule 13 must be complied with as to the position and distance of bore-holes, width of road, etc. A strong ventilating current should be

maintained along the face, sufficient to carry away any gas which may be given off from old workings or newly exposed face.

Dip Workings.—In this class of working many accidents result from runaway tubs. To prevent these efficient appliances should be provided (drags, safety blocks, etc.) Man holes should be provided for refuge in case the tubs break away.

Underground Fires.—In some mines fires occur spontaneously owing to the oxidation of small coal thrown into the waste. This is greatly increased when iron pyrites is contained in the coal. In mines of this character as little coal as possible should be left in the waste, but should be sent to the surface. Preparations should be made for cutting off the supply of air in case of a fire taking place.

Examination of Working Places.—In accordance with the Act persons must be appointed for the purpose of inspecting the various parts of a mine as regards the condition of roof and sides, state of ventilation, and general condition of the mine. The quality of these inspections greatly determines the safety both at the face and other parts of the mine.

The above I think covers the chief items which require attention at the face to reduce the danger to a minimum.

## FIRST AID.

Q.—In a case of asphyxia state fully how you would treat.

A.—It would perhaps be best to point out a few of the commonest causes of asphyxia, which is known more widely as suffocation, and is applied to that description of accident in which a greater or less degree of interference with the breathing functions is represented. As the main duty in breathing is that of getting rid of the waste products which accumulate in the blood as a result of our bodily work, and also the taking in of oxygen gas (which is a necessary part of our food, and without which all vital action would cease), it can be readily seen that when obstruction to breathing exists grave results may be produced in a very short time.

Asphyxia may be produced in several ways. The case of choking caused by a mass of food becoming impacted at the top of the wind pipe (Trachea) offers a typical illustration of asphyxia.

Hanging represents another cause of asphyxia, and may be either the result of an accident, or, as is more usually the case, may be attempted for suicidal purposes, or as in a case when the extreme penalty of the law is carried out, the third or fourth cervical vertebra is dislocated, and no treatment is required in this case. Breathing of poisonous gases offers another cause of asphyxia, being the result of persons breaking rules and



## MARITIME MINING RECORD.

NOVA SCOTIA'S IRON AND COAL.

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The RECORD is devoted to the Mining—particularly Coal Mining—Industries of the Maritime Provinces.

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R. DRUMMOND, PUBLISHER.

STELLARTON, N. S.

August 11

Some ten years ago the Record declared that our laws in reference to the regulation of Coal Mines were in advance of any similar legislation in the world. That was a very big statement to make. It has since also been made by many of the papers, and by speakers from public platforms and never successfully challenged. Some even at this date may not guess how many years ahead of other countries we were in mining legislation. A bill lately passed the British House of Commons called the Checkweigher's Bill. After the bill had been reported up the solicitor General for England moved as an afterthought that a new clause be added to the bill. By the addition of this clause the British bill of 1909, is on a par with the Nova Scotia bill of 1898. Nova Scotia in this instance has had a lead of eleven years on the mother country. To show that the N. S. bill of 1898 is even more comprehensive than the British bill of this year, we publish the chief clauses of the two bills, N. S. being the first:—

"A check-weigher shall have every facility afforded him to take a correct account of the weighing for the persons by whom he is so stationed, including facilities for examining and testing the weighing machine, and checking the taring of tubs and boxes, when necessary; and also for counting boxes and tallies in order that the number of boxes, weights or quantities credited to each person may be ascertained, and also including a shelter from the weather, and a desk or table at which to write, to be furnished by the owner, agent or manager, and access to all parts of the mine and bankhead necessary for the fulfilment of his duties."

"The facilities to be afforded to a checkweigher in pursuance of Sub-section 2 of Sec. 13 of the Coal Mines Regulation Act, 1887, shall include suitable and sufficient accommodation in an office which shall afford complete protection from the weather and shall be furnished with a desk or table on which the checkweigher may write, and shall be kept under suitable conditions for the discharge of his duties as a checkweigher, and shall also include the provision of a certain number of weights to enable him to test the weighing machine."

From a communication in this issue of the Record, from the Editorial Office of the Department of Mines Ottawa, it will be gathered that Dr. Haanel, the man in charge, has wakened up to the importance of his task, and is to give to Nova Scotians, in elaborate reports some needed information as to the minerals of the province. In the communication there is outlined a useful, comprehensive reform of methods in regard to publication. Dr. Haanel is now working with good men on the lines and in the direction hinted at in the Record of June 9th. While freely admitting this we by no means allow that our opinion has been in any way assailed. We still are of the opinion that the work, good work, could be better, more satisfactorily done, by a provincial geological survey, working in close touch with the Technical College, and the Nova Scotia Mines Department, as is the case in Ontario. Of course, the Record congratulates Dr. Haanel on his recognition of a pressing want, and in obtaining the services of Messrs Hudson, Jennison and Woodman, experts on coal, gypsum and iron respectively, and yet at the same time it suggests that the communication and what is outlined hardly touches the subject of the Records editorial or of Mr. Dicks resolution as passed by the Mining Society of Nova Scotia, which tersely put was that the work already done by Fletcher and Faribault, should, at once, be compiled for general use, in compact form. This it is said is in progress for the geology of the gold fields, and will no doubt be extended to all the geological formations of the province, accompanied by a good map to more clearly demonstrate the work done by these veterans which has now extended over many years. Notice must be taken too of the work done by Scott, Barlow, Logan, Hunt, Selwyn, etc., etc. The great variety of the investigations may be supposed from the 2 indices published by the survey. Vol. I containing a mass of matter and valuable data is, from the hurried nature of its preparation incomplete, but corrections and additions will in all likelihood be made in subsequent volumes. These volumes we would respectively suggest to the Mines Branch should be made more easily accessible, for all the subjects, by provinces.

## A WORD FOR THE OPERATORS.

If one were to believe the Free Coal League the Nova Scotia coal operators are worse than the villain in the worst play. Their chief end is to glorify themselves and rub it in to the poor consumers in the province. The operators have not a single redeeming feature or if they have then it has not come within the notice of the Free Coal League, the Herald or many of its correspondents. A Scottish paper referring to the dispute between the colliery workers and the operators, had the following to say on behalf of the latter. Whatever force the remarks have as applied to British operators, apply even more strongly to operators in N. S.:

"It is possible for outsiders to think that the coal owners are too stiff, but hard facts must be looked in the face. Coal mining is not invariably

profitable, and many collieries can only be carried on at a profit when prices are above what may be called normal. But that apart, when the labour cost of production gets out of proportion to the prices realisable it involves less loss to close down a pit altogether than to operate it. And that implies the displacement of many mine workers. It has always been maintained here that the policy of the minimum wage is a dangerous one, calculated sooner or later to react to the prejudice of the miners themselves. And that is the present prospect. Already German coalmasters or dealers are preparing to sell coal in Scotland if our pits are closed, as is threatened. During the last great strike some coal was imported into this country from Belgium, and the not quite the class of fuel to which our industrial consumers are accustomed. Necessity alters customs—even from Nova Scotia and the United States—to preserve us from an industrial famine; but that will involve an enormous addition to the industrial cost of production, to our prejudice in the world markets. These are points that perhaps the miners do not consider, but they have a material bearing on their position and policy. They cannot hurt the coal trade without hurting all our industries and also themselves. We do not profess to judge whether the minimum wage they now desire is more warranted by the circumstances than the minimum rate which they formerly agreed to and which the employers wish to maintain. But we do maintain that this is no time to raise contention on the subject, when so many men in all classes of industry are unable to obtain any wage at all. We would suggest that the time is opportune for a general conference between parties on the whole subject of the minimum wage."

#### COAL AND COAL MINING IN NOVA SCOTIA.

Mr. Joseph Hudson, M. E., has been almost continuously occupied in the preparation of material for a report on coal and coal mining in the province of Nova Scotia. The following list of sub-titles will indicate the scope and character of the work:

- 1—Area and extent of the coal field.
- 2—Early history of mining in Nova Scotia.
- 3—Development and expansion of the trade
- 4—Coal companies, railways, and shipping piers
- 5—Descriptive articles on the works and mines of the coal companies operating in the province of Nova Scotia.
- 6—Mode and method of working coal; sections of the coal seams, together with information and data on coal cutting, haulage machinery, and general appliances.
- 7—Accidents in mines; the use of safety explosives, and rescue stations.
- 8—Tabulated rates of wages, and employees' contracts.
- 9—On screening and coal handling appliances; also on the improvement in value of secondary coals, by means of wash plants.
- 10—Advisability of indirectly transforming slack coal into electrical energy at the mine, for

transmission to manufacturing centres.

11—The working of coal seams under submarine areas.

The work should prove valuable and interesting to all engaged directly or indirectly in coal mining in Nova Scotia. It is to be hoped the Mines Branch will hurry on the publication of the report, even suppose Mr. Hudson has to work, and be paid for overtime.

Three years ago when Old Age Pensions were under discussion in Nova Scotia, the Record stoutly insisted in favor of a contributory as opposed to a non-contributory scheme. In other words it endorsed strongly the view that the pension should not be a pure charity from the government, but a right to which the beneficiaries were entitled from the fact that the funds from which pensions should be drawn would have been built up in part by the contribution of the beneficiaries. Those of a socialist turn of mind were wholly in favor of a non-contributory scheme. This view largely prevailed among the miners of Britain and it is to be supposed that the idea came from there. When the present liberal British governments pension scheme was passed many jumped to the conclusion that the pension was wholly a gift, and that the workingmen chiefly to be benefited would not be asked to contribute to it. That is a mistaken idea. They by the present budget are asked to do so, if not directly then directly, and in larger proportion, perhaps, than under the scheme proposed for Nova Scotia. Mr. Asquith, the British Premier, said a little time since that "two principles had guided the government in apportioning the new burden of taxation. First that all classes rich and poor should bear their share. In regard to Old Age Pensions he had said from the first that the working classes must contribute to the cost of this great experiment in social reform; second, that the increased taxation, should as far as possible not be placed on the necessities of life. While the budget imposes a net burden of £6,850,000 on the well to do—in estate duties and land and income taxation—it imposed on consumers—through the spirit, tobacco, and high license duties, a burden of £6,100,000." From this it will be seen that the British workmen in old age pensions are not getting their self respect that they should know that they are contributing to the scheme upon which they expect to draw, if spared to old age.

#### THE IRON ORES OF NOVA SCOTIA.

The Record lost favor in some quarters for having called upon the government to take some steps to find out whether the assertion of a former official of the Mines Department was correct, to wit, that there was more iron ore in Nova Scotia than there was coal to smelt it. The Record never said there was not iron ore in Nova Scotia; it only asked that those who said there was should give some evidence or proof of it. A wrathful Halifax ex-Alderman tried to crush the Record by giving the supposed quantity of ore

in areas in which he, the Alderman, had an interest. That was the nearest approach to proof offered, and, of course, it counted for little. The Record regrets exceedingly that Prof. Woodman, in his latest report, is not at all optimistic. If the Record called for proof in the first place, it also calls for further proof in the second case. While not prepared to accept the statement that our ores are limitless, neither is the Record prepared to accept Prof. Woodman's opinion, that the deposits are small. The professor, with all his ability, is not able to form a correct opinion in hasty flights through the counties. Some real heavy practical work is necessary before it can be determined whether or not Nova Scotia has large bodies of iron ore of commercial value. Here is part of Prof. Woodman's last report. Such figures as are used below; analysis averages, distances, etc., are preliminary:

The iron-bearing zone of the Cobequids does not extend as a definite unit east of DeSert river. Many small veins of ankerite and allied minerals may be found across Colchester county, and into western Pictou; but they are isolated, and of no commercial importance. Nowhere is there a zone of fracturing filled in a way like that of the Londonderry district.

At Kempton, northeast of Truro, and on the south flank of the Cobequids, is a local shear zone in which occur vein deposits of 'bottle' and dense limonite, also red, and specular hematite. The total length of the fissuring is several miles; but the productive part appears to be confined to a mile at the west end, in Upper Kempton. The wall-rock—a quartzite, has been slightly replaced; but for the most part the deposits are mere veins, and depend for their size upon the original open spaces. Hence it cannot be expected that there are very large bodies; although 'float' of very pure ore up to 3 feet in thickness has been found. There may be enough to contribute to existing furnaces with some profit, if the present wagon haul of several miles to the railway can be overcome. The best of the specular hematite near the Munro shaft, Upper Kempton, runs as high as 68.62 Fe. An average of several samples of limonite with small amounts of hematite, taken from the western openings is 57.69. It would, however, be impossible at present to ship ore of this high grade, since wall rock is too much intermixed.

The limonite contact pockets and the carbonate ores of Pictou county are still under observation. In the Devonian of Antigonish and Guysborough counties are many occurrences of specular hematite, specimens of which are of very high grade, hence have caused undue optimism on the part of interested parties. Most of these were examined, and almost without exception were found to be veins of small extent, and no promise. The Burns mine at Erinville, Guysborough county, is the only deposit that showed evidence of more than a very limited tonnage, a few thousand tons having been taken out at various times. Transportation to tide-water was too expensive. The ore here is a very soft coarsely specular hematite of high grade, but containing an excess of sulphur. The body is in the form of a pocket, and the ore becomes lean and spathic toward the walls. A sample of the best obtainable on a large dump gave:—

Fe.....	67.88
Insol.....	1.25
Sul.....	1.148

In Richmond county, Cape Breton, a large number of occurrences of hematite and limonite were investigated. A few showed magnetite. Some of the deposits are veins associated with the contacts of intrusive rocks; others are at unconformities between the Lower Carboniferous conglomerate and various pre-Cambrian formations; still others, as also in some parts of Cape Breton county, are in felsite. In all these the conditions are unfavorable to expectation of large quantities. In the conglomerate contact bodies there is in some places possibility of pockets of a few thousand tons, and it may pay to open up for shipment to existing smelters those situated close to transportation; but none are of such promise as to warrant placing a high selling valuation on the properties.

A few occurrences are interbedded hematites, little prospected; but having some promise, as in part of the Loch Monod district. None are situated close to transportation at present. An interesting deposit is that of the Micmac mine, between Robertson and Soldier coves, a few miles southeast of St. Peters. It is a contact body of magnetite and hematite in limestone, lying at, and near the contact of, the Windsor series and the Devonian below. Since 1882 some little work has been done on these prospects. The sulphur and phosphorus are high; but this contact is well worth exploring for a mile to the east across the Indian reserve. An average of all the samples available to date gives:—

Fe.....	44.74
Insol.....	7.80
Phos.....	0.625
Sul.....	0.720

The veins in felsite, mentioned above, may be typified by those south of Arichat, Richmond county, and those at Gabarus, Cape Breton county; the mineral being usually specular hematite. It should be unnecessary to say that there can be no hope for workable bodies under such conditions.

In various parts of Cape Breton county, notably along the range of the Boisdale hills, are deposits of hematite similar to the magnetite of Barachois, previously described (Report of the Supt. of Mines, 1906, pp. 30-31). At the Curry property—half way between East Bay and Boisdale—is a pocket of this type, locally long known as the Mosely mine. Its longest axis is northeast, parallel to the strike of the crystalline limestone in which it lies. The ore is of good grade, but the tonnage is limited. Slight traces can be found northeastward for some distance, but for the most part the replacement has been too incomplete to give a high iron content. At the Campbell farm, three miles to the northeast and on the strike of the Curry ore, an impure replacement of limestone and quartzite gave 42.51 Fe. A general sample of the large dump at the Curry mine gave:

Fe.....	56.790
Insol.....	12.750
Phos.....	0.008
Sul.....	0.022

Along the south side of the Coxheath hills, and only a few miles west of Sydney, are a number of untested contact deposits of limonite, lying at the base of the Lower Carboniferous limestone and against the pre-Cambrian. The location of these is favourable to cheap mining and transportation, as they are of easy access to the Sydney furnaces; and well worth explor-

ation. A general sample of one half ton from one pocket gave:

Fe.....	54.700
Insol.....	6.980
Phos.....	0.092
Sul.....	0.013

By far the largest district investigated during the season is the Mira field, in southern Cape Breton county. This lies on the East side of the Mira river, and extends from near the Roman Catholic church at Grand Mira, south, to below Marion Bridge on the northeast, a distance of eight or nine miles. The field has long been known, and in parts a considerable amount of surface exploration has been made—enough, at all events, to indicate quite definitely the characteristics and value of the deposit. The ore varies from a black magnetite to magnetic hematite, and thence to a non-magnetic phase. It is interbedded in quartzites and slates, and in many ways bears a close resemblance to the Arisaig ore. Several bolts are uncovered, also more lines of partial replacement; and the mineralized zone can be traced, with perhaps a slight interruption by faulting over the entire distance mentioned.

The largest amount of work has been done on the northeast end near Marion Bridge by the Dominion Iron and Steel Co., and on the south by the Nova Scotia Steel and Coal Co. The latter shows ore mixed with alternate bands of slate and quartzite up to several feet in width; but in no case does an ore band exceed two feet. The ore often grades into rock insensibly, becoming siliceous outward from the centre of the boulder showing 3 feet of hematite clear of rock, and much of the exploration evidently was based upon that theory. But no evidence could be secured of more than a few inches of clear ore.

The most marked peculiarity of the iron throughout the field is the discontinuity of the bands. Not only do they pass transversely into rock by insensible gradations, but they die out completely along both strike and dip, in many cases reappearing again within a few inches or feet as occupants of the same rock horizon. The evidence indicates incomplete replacement of siliceous strata by iron oxides. These occurrences are the best illustrations yet seen by the writer, which are of service in working out the genesis of the bedded or Clinton type of ores. From an economic point of view, however, this district is a disappointment, as the replacement is everywhere too incomplete to provide a workable ore at anything like the present price of iron, in a field which for many years has been regarded as an important prospect. This is the more disappointing since the type is one from which much is usually expected, and the analyses made indicate an ore comparing favourably with any other bedded occurrences. The district is at all points very accessible to Sydney. The best ore, in which replacement was complete, gives over 60 per cent. Fe.; less than 10 per cent. insoluble; and a moderate amount of phosphorus (for a bedded ore); and a negligible quantity of sulphur.

The work of the season, then, may be summarized as regards iron ore by the statement that, no indications of large ore bodies were found; only a few which may upon proper exploration prove of value as contributors to smelters which are not obliged to depend upon them for their chief source of supply."

## - Rubs by Rambler.

"He cannot even drive a nail" is an expression frequently employed in a contemptuous way, when we wish to call attention to the depth of a man's stupidity. To drive a nail however, and drive it properly is not the simple matter generally imagined. A contributor to the Scientific American has this to say on the subject:

"It usually takes a woodworker's apprentice a year or more to learn that he does'nt know how of a man whom he heard using several blows of the hammer to drive a shingle nail, was somewhat crestfallen when told that the nail would hold better when driven 'home' by several light taps, than when driven by one heavy one.

"Why?" he asked in surprise.

"Because," said the other, "when you drive a nail home with a heavy blow, it is apt to rebound a trifle, loosening the grip of the wood fibres on it. Drive it almost down, if you will with as hard blows as you wish, but finish the job with several light blows."

"One who thinks that the driving of a nail simply consists in getting the whole length of it out of sight, has little conception of the real nature of the operation. A nail driven by an expert will often hold several times as much as one ill driven; while, too, it is often made to draw the parts into place. If you have ever watched a mechanic driving nails, you have doubtless noted that he rarely drives one at right angles with the face of the work. There is a reason for this. Suppose that he is nailing the 'sheeting' on the frame of a building, and desires to draw the board down tightly against the one below it; he points the nail downward, and a few well considered blows at the last produce the desired effect. If the board is bent edgewise, so that much force is required, probably he will start the nail in the upper edge, pointing very sharply downward. Again, two nails driven in a board at different angles will hold it in place much more firmly than the same nails would if they were driven in at right angles with the face of the board.

"Did you ever notice that, in driving a nail in very hard wood, one man will do it successfully, while another succeeds only in doubling the nail up before the point has fairly entered the wood? The difference lies in the fact that the expert strikes the nail fairly, and not too hard, 'coaxing' it in; while the other strikes too hard and with indirection. It may be profitably mentioned, right here, that in driving a nail into very hard wood, it is usually profitable to dip the end into oil or grease. This will not sensibly interfere with the holding qualities of the nail, while it will very materially facilitate its driving."

There are some people who have no bright outlook. Gloom continually overshadows them; they sigh for the good old times and are never tired of saying, things are going fast to the bad. There are some people never happy unless they



are recounting their numerous ailments and some unhappy unless they are recounting the ailments of others, of society or the country at large. From a blue book published lately by one of the Departments in Britain it is made plain that the country is not going back but progressing morally, socially, and materially. A British leading paper says:

"On the whole, the statistics are reassuring. Education, we know, has greatly developed. Nearly everyone nowadays can write after a fashion, and prodigious sums are spent on teaching. Crime has decreased, though at present it is stationary. In 1857 the number of indictable offences per thousand of population was 2.84, and is now 1.67, having been near this figure for twelve years. Thrift has increased so much that the total saving per head of population is now more than five times as much as in 1850, while the funds of friendly societies and trades unions have multiplied prodigiously. Wages have increased about forty per cent. in forty years, while the cost of living has decreased. Rents, however, have probably increased. Taxation, also, and local indebtedness show a great and steady growth. Rates have risen from 2s. 11d. per pound of valuation in 1850-51 to 6s. 11d. in 1904-6. Also the amount of local debt, including the capital borrowed by the Metropolitan Water Board, is now four hundred and eighty three millions; being more than £14 per head of population. As against this, there are very large assets in the way of water works, gas works, tramways, etc., but no attempt has been made to appraise them. On the whole, there is a good case for hopefulness, and pessimists may be advised to give careful study to the figures.

The visit of the Socialist lecturer to Cape Breton has so far produced no visible effects. I do not hear of any revival. There have been no strange going ons, of the C. B. Socialists, therefore I am minus a text for a favorite theme. About the time of Burns anniversary, or, say, a little before that time, there were those who put forth the claim that Burns—Robert Burns—was a Socialist. One of those was a Halifax churchman with a Scottish name. At the time I disputed the claim and pointed out that Burn's idea of happiness was a snug wife, a house of his own with a outhouse fireside, where he could spend the 'gloom-in' of his days. Since then a line in his 'A man's a man for a' that' has struck me that Burns was not at all a Socialist, and least of all of the red flag brand. The song is, of course, intensely democratic; it is far, at the same time, from being Socialistic. The best quoted verse of the song, which is the last, runs:

"Then let us PRAY, that come it may

As come it shall for a' that

When man to man the world o'er

Shall brethren be, and a' that."

The pronounced Socialist does not count upon prayer as a factor in bringing about his millennium; it is too slow and, he thinks, too uncertain a process. He can't wait; peaceable means are not to his liking, he wants to force things. To introduce the new he would discard every old method. He believes in revolution. Burns believed that brotherhood, universal brotherhood at that, would come in time, not by extreme measures, but by a gradual process. Persistent praying and striving

after better ideals were the weapons Burns looked upon to bring men more closely together.

INVESTIGATIONS BY THE DEPARTMENT OF MINES  
OTTAWA, IN CONNECTION WITH THE IRON  
AND COAL INDUSTRIES OF N. S.

(From the Editorial Office, Mines Dept.)

Since the organization of the Department of Mines by the Honourable the Minister of Mines—William Templeman, Esq., M. P., some two years ago, the Province of Nova Scotia—as regards its metallic and non-metallic mineral resources—has received considerable attention.

In December, 1908, the great Report on the Mining and Metallurgical Industries of Canada, 1907-8, was published. This report contains no less than 114 pages devoted to iron and coal mining in Nova Scotia. True, it is only a technical directory; but it supplies a long felt want; since it contains invaluable information on the history, and present conditions of the metal and mineral trades, eminently suitable for all sorts and conditions of men in the commercial world.

In a few days will be issued Part I of Dr. J. E. Woodman's exhaustive report on the 'Iron Ore Deposits of Nova Scotia,' containing 241 pages of text, and 63 pages of illustrations and maps; and Part II—which will be of like magnitude to Part I—will soon be ready for the press. The technical data contained in this comprehensive work, together with the trade and statistical facts set forth in the technical directory mentioned above, will practically cover the ground of the entire iron industry of Nova Scotia, up to date.

Then, as regards the coal industry; two years ago McGill University was commissioned to make exhaustive chemical tests of all the coals in the Dominion. This investigation—just finished—embraces the coals of Nova Scotia, and the report of these tests, in four volumes, will be published at an early date.

Further, there is being prepared a thoroughly practical report on coal mining in all its branches by Mr. Joseph G. S. Hudson—a practical mining engineer—who has a wide practical acquaintance with the coal mining industries in Nova Scotia. This report will contain illustrated descriptions of the latest methods of coal mining in all its phases, and will be a work which every intelligent miner in the Maritime Provinces will be eager to see and consult.

Moreover, anticipating the establishment, in the near future, of fine-steel industries, and knowing the importance of metallic alloys in the manufacture of high-speed cutting tools, etc., a special report on Tungsten ores has been prepared and will be off the press in a few days; and iron-graphs on molybdenum, and manganese ores are in course of preparation.

Nova Scotia has probably, the largest known deposits of gypsum, and these are generally described and illustrated in the Report on the Mining and Metallurgical Industries of Canada, 1907-08; but taking into further consideration the commercial importance of gypsum, an elaborate, detailed report is being prepared and will be published soon. The extensive limestone deposits in the Province, which are of such great importance

in metallurgical industry, are fully described in Dr. Woodman's report on the Iron ores.

In view of the facts stated, it is evident that, Nova Scotia will soon be in an exceptionally favorable position, as regards official information on the iron, coal, and general mineral resources and industries of the Province.

#### THE GYPSUM DEPOSITS IN N. S.

Mr. W. F. Jennison, has been for some time engaged in preparing a report on gypsum in N. S. From the following preliminary report the scope of Mr. Jennison's work may be guessed at:

"Gypsum in the provinces of Nova Scotia and New Brunswick has been known to exist since the discovery of the country, and the deposits have been operated a more or less extent for nearly a century.

The development of this mineral in Canada to-day, is only in the primary stage, and has not made the same progress exhibited by other countries.

The operations are carried on almost exclusively by American capital, and the product of the quarries is shipped to the United States in a crude condition for further treatment.

The deposits occur as huge masses, some of which cover square miles in area, having exposures of over 100 feet in height—above water level—and extending several thousand feet. They may be considered practically unlimited, with a quality unsurpassed anywhere in the world.

During the past decade there has been a great increase in the production of gypsum, and in the demand for the various articles manufactured from gypsum. Production in the United States increased over 500 per cent. This fact, and the promising outlook that command will continue to increase, make these deposits of great economic value, and one of the most important natural resources of the country.

Realizing these conditions, and perceiving that the comparatively small development of these deposits is due to the lack of information already obtained, and also that it is very important our own citizens and others interested, should have full information as to the extent and uses of gypsum, and demand for the many products manufactured therefrom, I was instructed July 16, 1908 to prepare a monograph showing:

- 1—History and distribution of gypsum deposits.
- 2—The trade history of gypsum.
- 3—Statistics and graphic charts of gypsum production. The geography and topography of the Canadian gypsum deposits, with maps and photographs, showing extent of deposits and facilities of manufacture and shipping.
- 4—Origin of gypsum, general theories.
- 5—Deposition from sea water, by thermal springs by the action of iron pyrites on the carbonate of lime.
- 6—Gypsum as a fertilizer. Its uses among ancient people. The experiments by well known authors. Theories of action on gypsum as a fertilizer.
- 7—The chemistry of gypsum, plaster of Paris, cement plaster, methods of analysis.
- 8—Technology of gypsum. General and physical properties.
- 9—General requirements of a plaster mill, with cuts and specification and costs of construction. Chemistry of the manufacture of plaster. Retarders accelerators.
- 10—The methods of operation, with costs.
- 11—Markets, and value of product, etc. etc."

#### THE TREATMENT OF TIMBER FOR USE IN MINES.

A method of treating of timber, known as the Henry Aitken method, is now used at many collieries. In this process the idea is to soak the timber in water, raised to a temperature of from 190° to 200° Fahr., containing enough common salt to form a thoroughly saturated solution.

The timber should be free from bark, fairly well seasoned, and thoroughly dry.

Any tank, either wood or iron, of a size suitable to contain the timber to be treated will do, and the water should be heated by exhaust steam, or otherwise.

The time necessary for completing the process largely depends on the nature and size of the timber, but two days will, in general, be sufficient.

By sawing off a small part of the timber being treated, it can be seen whether thorough penetration by the salt has been obtained.

When the timber is removed from the treating tank it is soft, and not in a condition for immediate use. It is dried by being put into a covered shed, or stacked in the open air.

The cost of treating timber by this process averages in Great Britain, about one penny per cubic foot. Some of the managers of the largest collieries in Scotland, who have adopted the process, write as follows:

Mr. Maevie, manager Cadzow collieries, Hamilton, regarding the Aitken process for treating the timber for use in mines, states that in his five years' experience he had never seen the least indication of decay in any timber so treated.

(every alternate one treated) About four years ago, gears (turn airway of the No. 3 Pit Ell coal seam, Cadzow colliery. About a year ago, all the untreated gears were replaced, owing to decay. The treated timber is still in use, and in good condition. As regards the contention that the Aitken process reduces the strength of the timber, he had never seen anything to make him think this was the case. Indeed, he had stopped using larch timber, and now used treated Scotch, or foreign fir.

Mr. Ferguson, manager Benarty colliery, Fifeshire, Lochore and Capletrae collieries for upwards of six years, and during that time it has proved a great saving, not only in wages renewing broken timber, but also in the price of wood used, which is now nearly all foreign timber. The treated wood had stood in the return airways for six years, and was quite sound. If this wood had not been treated it would have been replaced twice during the above period. No tree which had been treated had shown the slightest decay during the six years.

Mr. Carlow, managing director Fife Coal Company, Leven, Fifeshire, writes that the Aitken process has been in use for four years.

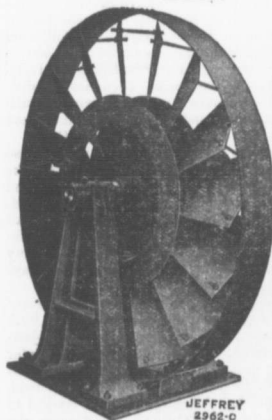
The following experiments have been made with the process: Two pieces of ordinary fir, 3½" in diameter and 3 feet long, both weighing 10 pounds before being treated, were selected. One of the pieces was treated by the salt process and the other was not. After being treated it weighed 12 pounds. Both were taken underground and placed in a return air course, and after eleven months were examined and re-weighed. The untreated timber then weighed only 5 pounds, whereas the treated one weighed 12 pounds, being ex-

actly the same weight as when it was put in. They were put back into the mine and allowed to remain eleven months longer, with the result that the untreated timber weighed 6 pounds, and the treated timber weighed 11½ pounds. They were again replaced in the mine, and after an exposure of three years they were examined, and while the treated piece was sound, the untreated one was decayed. Besides these tests, observations were made on the treated timber put into main roads, beside other timber not treated. The treated timber remained damp and fresh, while the untreated crown-trees were dry and soft on the out-side, showing that decay was in progress.

The amount of salt that timber will absorb depends on the firmness of the wood and its dryness at the time of treatment. Norway fir absorbs from 15 to 50 per cent. of its weight, that is, it becomes 15 to 50 per cent heavier after treatment, while larch crown-trees absorb only 10 per cent.

The cost is about one penny per cubic foot for salt, and one farthing for labour, a total cost of about 1½ d. per cubic foot.

#### JEFFREY PROPELLER MINE FAN.



The Jeffrey Manufacturing Company, since placing upon the market its centrifugal fan for the ventilation of coal mines has received many inquiries for a type of fan suitable for developments that do not justify the installation of a centrifugal fan. This led them to investigate thoroughly the action of the ordinary disc fans commonly used in such cases. A prolonged series of tests and experiments, with a disc fan located at Columbus, developed that the present type of disc fan was inefficient when working against considerable pressure, for the reason that the air forced backward by the resistance would re-enter the fan near the center of rotation, where the velocity of the blades is very slow, as compared to the velocity at, or near the periphery of the wheel. This action would cause a churning of the air through the fan as a large proportion of the air discharged near the periphery of the wheel would merely flow back through its center. It will be noted by reference to the above cut, that the Jeffrey Propeller fan is provided with a heavy solid driving disc which prevents the air from re-entering after it has been discharged from the blades of the fan. This feature is a decided improvement over the common form of disc fan and the efficiency of the fan is further greatly augmented by the fact that the air

on the intake side is given a centrifugal action near the center, and is then discharged in a horizontal direction from the spiral deflecting blades. These blades are riveted between two discs at the most efficient angle, and the outer ends of the blades are drawn into a spiral shape by adjustable stay rods, so that the blades have practically the same pitch at the other edge as they have at the periphery of the disc and consequently discharge the air at practically the same velocity over the entire discharge surface of the wheel.

This fan is well adapted for ventilating small operations and most practical for boosting along feeble currents in larger ones. It is fully illustrated in a neat bulletin No. 23, issued by the Jeffrey Mfg. Co., Columbus, Ohio, which will be mailed upon request.

#### "SHORTT" CUT TO PROMOTION

A late issue of the 'Calendar' (Ottawa) contained the following caustic remarks, re civil service promotions, etc.:-

"It was commonly understood that the Government in re-organizing the civil service, had chiefly two objects in view; first, to set the civil service on a business like footing and conduct it on business principles and by business methods; second, to re-adjust the salaries of the Civil Servants to the conditions of every day life consequent upon the increased cost of living.

The means chosen by the Government to bring about its economic and philanthropic reforms was, first, a commission of investigation; second, a reorganization of the Service by Act of Parliament; and third, another commission to assume the direction and control of the newly organized body. The intentions of the government were most commendable and endorsed by the Opposition and the country at large. But it is one thing to intend and another to accomplish.

The first experiment of these Commissioners was to put into effect an elaborate competitive examination scheme for entrance and promotion, placing outsiders on an equal footing for vacancies and positions in the higher ranks with those already in the Service for years. Had it been for entrance only there would not be so much room for criticism. But promotion is altogether another matter, and if many of the Civil Servants have not yet cried out, it is probably because they are too dazed by the hideous nightmare of university subjects for examination that has been thrust between them and possible promotion with its attendant increase in salary.

To get at the injustice and general absurdity of the thing, let us take and consider at close range the position of just one class of Civil Servants, those in Subdivision A of the third Division, and the subjects they will have to tackle and overcome before they can hope for promotion into Subdivision B of the Second Division.

This class, Subdivision A of the Third Division, is comprised of Servants who are getting from \$900 to \$1,200 a year, a large class in itself, of men and women who have been years in the Service, of officials, many of whom are most competent in their office work and, if training and known efficiency count for anything at all, should be more eligible and better fitted for the next superior grade than can possibly be the inexperienced outsider.

Now, let us see what is the nature of the examina-

tion the Commissioners call this class of Civil Servants to face before they can obtain promotion. Quoting from the Regulations of the Civil Service Commission (approved by the Governor General in Council.) Section 12, we read: "Candidates for the general competitive examination for clerks of Subdivision B of the Second Division shall take all the subjects in group A of the following list, any two in group B, and any three in group C:—

(Group A.—Writing, Spelling, Composition, Literature, Arithmetic, Typewriting, French (for those taking the general examination in English.) English (for those taking the general examination in French.)

(Group B.—Algebra, Geometry, Physics, Chemistry, Geology (including mineralogy,) Biology (animal and vegetable.)

(Group C.—Latin, German, History (modern), Political Science, Economics, Geography (general, physical and commercial), Philosophy (scholastic or general), Law (English or civil)

A goodly list in very sooth, and much more easily enumerated than mastered!

Now, the class of men already in the Service who in seeking promotion are called upon to go up against this formidable array of learning are not University graduates nor even College men; they are for the most part past the age for becoming students, but yet quite capable of doing the work that has been or is likely to be entrusted to them, the which, it would be admitted by the real man of business, should be the very best training and preparation for the higher departmental duties. In such a competitive examination as that prescribed, these experienced clerks will have no show against the more or less advanced students—University graduates, may be, judging by the predilection for the Service evinced by one of the Commissioners himself—who will be sure to flock to the examination, and a very grave injustice will be done the former, if inexperienced outsiders are passed on above them. To many of these officials the situation must appear simply hopeless.

Amongst the compulsory subjects of the examination is Typewriting. Typewriting hitherto was made an optional subject and, as the vast majority of Civil Servants do not have to typewrite, there can be no sufficient reason why it should not have been continued. In view of the number of English speaking and of French speaking clerks in the Service, it is difficult to see any necessity for obliging the former to pass an examination in French, and the latter one in English. A practical knowledge of French is not gained in a few months nor, except under exceptionally propitious circumstances, in a few years, and a smattering of the language for practical purposes will prove worse than no knowledge of it at all, and the same may be said of these subjects obligatory will militate strongly against the class of clerks under consideration, in competition against prepared outsiders. All the subjects in groups B and C, with the exception, possibly, of Geography and History are rather subjects for the specialist—for whom the Civil Service Act otherwise provides—than for the ordinary average Civil Service clerk, who would be wasting his time in studying most of them for any practical value they would be to him in the work he will be likely called upon to perform. But when it comes to Philosophy, one is inclined to wonder why the

Commissioners forgot to include Theology, Therapeutics and the Differential Calculus—also Euechology, Phlebotomy and Deuteroscopy, not to mention Aeronautics.

The following little skit will about illustrate the way in which these examinations will work out—'Peters' being the experienced clerk, but little versed in outsider, innocent of office work but thoroughly posted in all the vagaries of examination questions:

The subject is Chemistry. 'Peters,' asks the C. S. Commissioner, 'can you tell me what it is that makes the water of the sea so salty?'

'Salt,' answers Peters, with the ready confidence that comes from constant dealing with facts, 'Next,' shouts the C. S. Com. 'What is it makes the water of the sea so salty?'

'The salty quality of the sea water,' answers 'Next' with sufficient quantity of chloride of sodium to impart to the aqueous fluid with which it commingles a saline flavor, which is readily recognized by the organs of taste.'

'Right,' says the C. S. Com. 'Go up one! You are destined for a chief-clerkship.'

That there may be no doubt as to the aim the Commissioners have of affiliating the Civil Service with the University and of moving the latter the avenue to entrance and promotion in the Service, the following ent in the Regulations affords ample assurance—'In order that due regard may be had to the difference between university systems in Canada, a curriculum shall be prepared by the Commission, showing, with as much detail as possible, the ground to be covered under each of the subjects in the above groups A, B and C.'

The scheme of the Civil Service Commissioners, so far as those already in the Service are concerned, looks like education run mad. It discounts experience and length of service, and puts a premium on merely academic qualifications, and in doing so runs counter to all business principles. Above all, for the clerks in Subdivision A of the Third Division, as well as for many others, it is teaching things out of season, and, as says an eminent writer, and great business man:

"Teaching things out of season is a woeful waste of time. It is also a great consumer of nerve force, both for pupil and teacher. Knowledge not used is objectionable and dangerous. Nature intends knowledge for service, not as an ornament or for purposes of braggadocio. Use and acquaintance should go hand in hand. Skill must be applied. All great writers learned to write in just one way—by writing. To acquire the whole kit is absurd—get the tools one at a time as you need them."

This is good advice. It has the right business ring about it, but it is directly at variance with the methods pursued by the Commissioners, to make incompetent clerks competent, or the already competent more proficient by a thin smattering of Latin or French or German, of the sciences of philosophy. That cannot be done by book learning. It can only be accomplished in the office, in the workshop, by practice, by perfecting methods by wise direction and intelligent assiduity."

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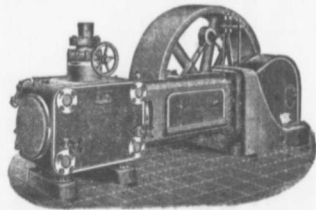
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Time Table No. 26, Taking effect at 1 a. m. OCT 11th., 1928.

EASTBOUND		STATIONS.	WESTBOUND	
Read Down	No. 22 No. 54 a. m. p. m.		Read Up	No. 21 No. 53 p. m. a. m.
L 10 45	8 2 50	F TUPPER JUNCTION	A 10 30	A 3 35
W 10 31	8 2 36	PORT HAWKESBURY	W 10 22	W 3 27
A 11 10	A 4 08	PORT HASTINGS	L 10 05	L 3 10
	L 4 13	TROY	P 9 52	
	F 4 2	CHEGINISH	S 9 39	
	8 4 36	JUDIQUE	S 9 25	
	F 4 56	CHAKMOBE	P 9 12	
	8 5 05	ATHERINES FOND	P 8 48	
	F 5		L 8 31	
	A 5 50	PORT HOOD	A 8 21	
	8 5 58	GLESCOE	S 8 13	
	8 6 16	MARU	S 8 7	
	8 6 29	GLESDYRE	F 7 52	
	8 6 48	BLACK RIVER	F 7 11	
	8 7 12	STRATHLOKE	S 7 13	
	A 7 15	INVERNESS	L 6 44	
	P 8		a. m.	

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An Oxford dean had a tortoise who was a great favourite with the students. He was a privileged pet, and allowed to wander about the quadrangle at will. A party of undergraduates one afternoon were trying to feed him while the dean looked on from his study window, unseen, behind a thick elm. After watching their fruitless efforts for a considerable time, the dean could repress himself no longer. He threw up the window, and shouted to them, 'Try the other end!', which they did, and this time with complete success.

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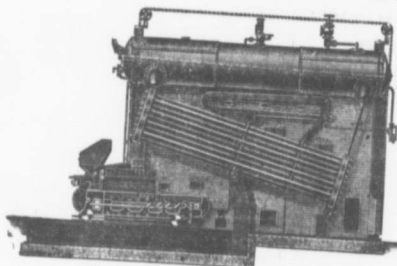
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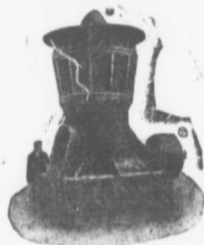
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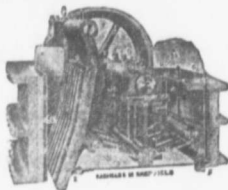
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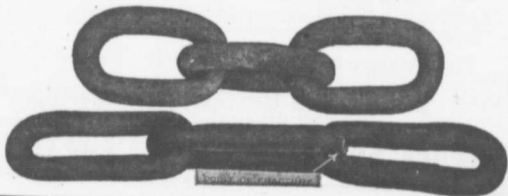
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Ash.....	3.75 %	3.19 %	4.19 %
	100.00	100.00	100.00
Sulphur.....	1.15 %	58 %	.79 %

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