The American Institute of Mining Engineers

(By R. W. Raymond)

Having been almost continuously an officer of this society since its organization in 1871, I may claim an intimate acquaintance with its history and administration; and I welcome the opportunity to explain in this contribution some features of its plan which are not perfectly understood by the public. Unfortunately, time is not at my command for an elaborate and complete discussion of the subject, and this sketch must necessarily be brief and fragmentary.

The period following the war for the Union was characterized by great activity in mining, and a great demand for mining engineers. The mining industry of the Pacific States had been ever since the discovery of gold in California, the leading factor in the settlement of the country, the improvement of communications and the establishment of civilized communities with auxiliary agencies of commerce and manufactures, as well as education and religion. The governmental aid given to the Pacific railways, on the ground that these lines were military necessities for the handling of the Indian tribes and the maintenance of sovereign federal authority throughout the vast Pacific slope, could have scarcely been secured, had not the mineral resources of that region given it a thrilling romantic interest and a boundless value in the eyes of the people of the east. At the same time, the exploitation of the western mines and the rapid development of coal, iron and copper and lead mining in the other states, called for trained engineers; and successive technical schools were established in response to this demand, while technical journals flourished and became more and more devoted to problems of theory and practice, as well as records of new enterprises. Meanwhile, the actual mining engineers of the United States—those who were doing the great work of mining both east and west—could not be said to form an organized profession at all. There were a few graduates of foreign schools; many civil engineers who had turned their attention to mining; a much larger number of miners from Cornwall or Germany, who had risen to be mine captains and "experts;" and a still larger number of self-taught American miners and prospectors, ignorant and jealous of book knowledge, and over-conscious of superiority in many respects to its possessors and professors. This heterogeneous multitude had no common ground for the interchange of views and experiences, and no organized common feeling inducing them to seek and occupy such a ground. The technical journals and the technical schools alike are felt to be needed to be reinforced in their endeavors by some agency which should promote personal acquaintance and mutual esteem among the men in whose hands were the mining operations of America.

It was my realization of this feature of the situation that led me, as the editor of The Engineering and Mining Journal, to attend at Wilkes-Barre, in 1871, the meeting called by three mining engineers, Eckley B. Coxe, Richard P. Rothwell and Martin Coryell, to organize an association. As a beginning, in default of a duly elaborated scheme to suit our special case, the rules of the North of England Institute of Mining Engineers were adopted in substance, and the name of "The American Institute of Mining Engineers" was chosen for the new society without debate, as a matter of course. The rules were subsequently re-written; but the name, though in some respects a misnomer, since it does not fully describe the scope of the Institute, has survived, and has become so dear to the members and so well known to the world, that it is not likely to be changed. A lucky misnomer is sometimes a "mascot."

At the outset, a most important question arose, the settlement of which involved the whole future of the society. Several educated engineers protested against the admission to full membership of persons not belonging to the profession, and not possessed of a certain degree of professional standing and experience. They could not insist upon the degree of M.E. or E.M. as a qualification. They did not themselves hold that degree; but they felt that C.E. or its equivalent in certified experience and knowledge ought to be required. In a word, they did not wish to recognize as fellow-members (though they would consent to admit as associates) common miners, foremen and self-educated mine captains.

There was much to be said in favor of this feeling. Professional societies usually represent professions, and membership in them is accepted as a guaranty of professional standing. Consequently, they make careful preliminary examination into the training and achievements of candidates, and sometimes impose a period of quasi-probation as "junior" before advancement to full membership. All this is excellent, for the purpose for which it was designed. But that was not the purpose of the Wilkes-Barre meeting of 1871; and if that had been its purpose, the movement would have failed. This point is so important as to warrant further explanation.

There was at that time no such thing in the country as a distinct profession of mine engineering, numerous enough to support an active and useful society. Any attempt to create one by means of a society would have resulted in a small, select (i.e., self-selected) coterie, barren of influence and outside of practical connection with the national mining industry.

The pressing need of the hour was not the segregation of a select body, but the cordial co-operation of all the representatives of a great industry or group of industries. This could only be effected by bringing together on terms of friendly equality the schoolmen and the fieldmen, and persuading the latter to do what they were naturally shy and reluctant in attempting, namely, to tell what they knew, for the benefit of all. Unquestionably the self-educated, practical mining and furnace men at that time knew more than the school graduates about the actual facts of American ore deposits, mine workings and furnace management. It was not the nominal manager but the Cornish captain who knew the mine; it was not the chemist but the founder who ran the furnace. If these practical men were invited at the beginning, they would stand aloof, giving no aid in the way of fresh facts, and leaving the theorists to exchange their speculations for little profit, like the traditional men confined in the garret, who proposed to have made money by swapping jacknives, back and forth.

Again, the work of publishing and disseminating useful information could be done upon an influential scale by a society with a large income; and this would require either a select society supported by heavy annual dues, or a numerous membership paying small dues. Beyond question, the latter was both easier to secure and more fruitful of influence as well as revenue. The result of thirty-five years' experience has left no doubt on that head. What the Institute has given to its members in the way of publications for the annual fee of $10 may be confidently compared in both quantity and quality with the similar publications of any society in the world, supported by annual dues of twice or thrice that sum.

Another point is worthy of note. A large membership, even if it be not narrowly confined to men of a certain ascertained standing in a single profession, furnishes an attractive and inspiring public to ambitious authors. A famous engineer (member of several other American and foreign professional societies, as well as of our Institute) once said to me: "The Institute is an association largely composed of young men with reputations to win, instead of older men with reputations to maintain. The consequence is, that your members are eager to communicate what they know or think instead of being afraid to 'give it away,' or reluctant to incur criticism by offering professional contributions not monumentally complete and creditable to their acknowledged professional standing."

The transactions of the Institute illustrate the truth of this keen, discriminating observation. Some of their most valuable papers have come from men who could not have claimed membership in more "select" societies, and who wrote, not because they were already known, but in order to make themselves known.

At all events, the force of circumstances dictated, and the experience of thirty-five years has approved, the decision which admitted to membership in the Institute all persons trained for, or practically connected with, the professions and industries which it represented.

But this decision involved the simultaneous adoption of another. In 1871 (and the same is true to a more limited extent today), the American mining engineer had to know many things besides mine engineering proper. He was expected to do, or intelligently to superintend, the work of assaying, milling, smelting and general construction and management. Moreover, a man who was running the mine today might be superintending the furnace tomorrow. Hence it was found both advisable and practicable to include in the membership of the Institute those who were connected with geology, chemistry, and civil, mechanical or electrical engineering, as applied to mining or metallurgy.

The American Society of Mechanical Engineers and the American Institute of Electrical Engineers, are both younger than our Institute, and, in some sense, its offspring. They have fields of their own, which they most creditably occupy; yet great numbers of their members still seek or retain membership in the Institute of Mining Engineers, and the Institute has had no reason to close the doors once opened to such candidates.

The original scheme of the Institute led to an unprecedented growth, both at home and abroad. The membership increased rapidly from year to year, and now numbers more than four thousand names, distributed throughout the world. This forced upon the management two additional problems: one of government; the other of policy. The meetings of the Institute were, from the beginning, peripatetic. Nothing else could have prevented its degeneration into a local organization, or kept alive the national sympathy necessary to its success. Until its incorporation in 1906, it had no official headquarters aside from the office of its secretary, which had been located, without any official action, wherever the secretary happened to reside—first at Lambertville, N. J., then at Philadelphia, then at Easton, Pa., and finally at New York. It was manifestly impracticable to leave the decision of business questions to the vote of such members as might happen to attend a meeting in some particular locality. Consequently, almost absolute powers were given to the council, chosen annually by postal ballot.

But such a grant of absolute power demands a precise limitation of its sphere; and accordingly the council of the Institute was prohibited from any act or utterance outside of the management of the proceedings of the society itself, namely, the holding of meetings and the acceptance, publication and distribution of papers. Gradually it came to be recognized that the Institute itself, as represented by the members attending a given meeting, was still less competent than its representative council to express opinions or approve of any kind outside of its own immediate affairs; and the final result was the present rule:

"The Institute shall not assume responsibility for any statements of fact or opinion advanced in the papers or discussions at its meetings. Neither the council nor the Institute shall officially approve or disapprove any technical or scientific opinion or any proposed enterprise, outside of the management of the meetings, discussions and publications of the Institute, and the conduct of its business affairs by the board of directors."

This policy is not only approved by our experience, but also founded in a correct theory of the relation of the Institute to its individual members.

A man who joins the society for the sake of the benefits by its publications and its fellowship has a right to the assurance that neither his name, his money, nor the influence of the organization which both his name and his money have strengthened, shall be used to promote any outside cause whatever. No matter how ignorant or prejudiced he may be, he is entitled to be protected against unwilling partnership in an opinion, or a movement, or an enterprise which he has not contemplated.

Several instances from the earlier history of the Institute will further illustrate this principle.

In the first decade there was a brilliant discussion before the Institute of the question "What is Steel?" and in 1876 an international committee of high distinction reported for our adoption a new nomenclature for the products of the iron blast furnace, the Bessemer converter, the forge and the crucible. But, underneath the technical questions involved, there were important questions of tariff classification, involving, perhaps, millions of dollars; and a sweeping decision of the Institute on either side of the case would have been used in argument before the United States Treasury Department, to the injury of the business interests and many members. This result was wisely averted by a refusal to promulgate any such general decision.

Later, there was a memorable debate, concerning the metric system of weights and measures, on a resolution recommending Congressional legislation to make this system obligatory. Here, again, the proposition was passionately opposed by members whose business interests would, at least in their opinion, be injuriously affected by it, as well as by those who, on principle, disapproved it. In this case, the speeches on both sides were reported in the Transactions; but when the time came to vote on the resolution itself, the presiding officer declared it to be out of order, as not included in the declared purposes of the Institute, and, therefore, declined to put it to vote. This decision, sustained by the meeting, may be said to have settled, once for all, the principle which, after several similar precedents, was formally embodied in the rules already quoted.

It is evident that no rule of this kind could be enforced if there were any recognized distinction as to the merit of the theme or proposition seeking support. Such a scheme or proposition, if of such a character as, almost beyond doubt, to command the hearty assent of all members, would surely constitute an excellent precedent and illustration for the support of the existing rule.

Ever since the Institute became successful, influential and widely known, innumerable attempts have been made in entire good faith, to secure the aid of its name and authority for propositions honestly believed to be (as, in most cases, they were) meritorious. Recommendations that congress should make appropriation for the representation of the United States mineral industry at this or that exposition at home or abroad; that the Institute should unite with this or that society to form a joint committee on national or international standards, etc., have all been "turned down"—the more meritorious, the more promptly. It was the only way to preserve our plan and purpose.

This statement may explain why the Institute and its officers, as such, have taken no part in the successive meetings of the American Mining Congress with the purposes of which a large number of our members are in sympathy.

I feel bound to add that the restricted policy above outlined has had somewhat unexpected and most gratifying results. The Institute has been the forum, and its Transactions the records, of the free discussion of nearly every important and pertinent question connected with the progress of modern engineering. Expressing no opinions, we hear all, and furnish to the proposer of any reasonable novel view an appreciative audience. And no student of the practice of the last thirty years in any department represented by our membership can afford to overlook the authoritative and suggestive contributions made by us to the technical literature of this generation.

There are many other features of the history, tradition, and consequent present administration of the Institute, concerning which I would gladly speak and feel myself exceptionally qualified by circumstances to speak; but I cannot thus add to the present sketch, which, I venture to hope, has explained (and even justified) the three leading peculiarities of the Institute, namely:

1. Its wide and liberal conditions of membership.

2. Its absolute government by a central body—i.e., its representative, rather than purely democratic, organization.

3. Its strict limitation of the functions and powers, both of the governing body and of the Institute as a whole.

Each of these features has been often criticized, usually in perfect good nature and good faith. I shall not now undertake to offer any further defense of them, not incidentally implied in the foregoing explanation. But I think I may fairly claim to have shown that they came into existence as the natural and necessary results of the conditions attending their origin. Even if something better might have been imagined, nothing better could have been done.

Finally, may I not modestly, but confidently, claim that the results of this enterprise, whatever may have been the defects of its plan, have been somehow or other, such as to warrant us in "letting well enough alone?"

The Other Side of Russian Penitentiary Life

(By B. C. Baskerville)

Warsaw, Poland, July 26.—Much has been published about the cruelties to which Russian prisoners are subjected. The victims of such treatment are usually revolutionists. The prominence recently given to the tortures inflicted on them at Riga and elsewhere have created an erroneous impression concerning the character of Russian prisoners generally.

Russia is the land of extremes and contrasts. While it is true that barbarities unknown in other civilized countries are frequently practised upon the inmates of Russian jails, it is equally true that the bulk of the prisoners confined in them enjoy far greater liberty and more privileges than is allowed those upon whom the law has laid its heavy hand in countries that enjoy a far greater measurement of free government.

As a people the Russians are lethargic and good-natured. And, with notable exceptions, of course, these are the characteristics of most Russian officials. They hate doing more for their pay than they have got to. For them the easiest way—the way that gives the least trouble—is the best way. The application of this system is seen to perfection in the Russian prisons. The enforcement of rigid rules and regulations necessitates hard work and therefore they are not enforced. The irksome discipline which prevails in English and American penal institutions, and more or less in all enlightened countries, is unknown in Russian prisons. Official vigilance in them for the most part concerns itself merely with keeping the prisoners within the walls of the jail. For the rest they are allowed to do pretty much as they please. They make their own rules and regulations and enforce them to the extent of inflicting severe punishments, and sometimes even death, on obnoxious comrades.

The hardships they have to endure are due in the main to overcrowding, lack of sanitation and their own dirty habits. Roughly speaking Russian prisoners are divided into two parts—the wing or wings containing the cells and those where the larger rooms are placed. Formerly the cells were reserved for individual occupants; but Russia has so many prisoners, political and criminal, that even in the smallest cells three or four men are lodged. Those who can afford to pay a little are sent to the larger cells; the poorer ones to the common rooms.

These last are a sight to be seen. Imagine a room such as I saw in a prison I visited the other day, built to accommodate twenty people, but occupied by sixty. The wooden shelf which runs round the walls is a bed at night and a table by day—it is littered with the worldly belongings of the inmates. Those who have come first have the right to sleep on the shelf, the later ones have to be content with the floor till there is a vacant place. The men are in various stages of undress. One who cannot afford to send his washing out, or has no friends to do it for him at home, has washed his shirt in half a pint of water—begged from the sentry—and hung it out on the tall white stove which stands in one corner of the room.

Another is mending his nether garment with the remains of some thread he chanced to have in his pocket when arrested, for he is to go up for trial tomorrow, and being rather proud of his personal appearance, wishes to look his best. He is a member of the revolutionary society, and took part in a train raid some months ago. He will be, in all probability, transported to Siberia, but the prospect does not affect his spirits, for he is joking with another man, who is busy making himself some cigarettes. All in the room smoke, thus making the air as thick as that of London in pea-soup fog.

Have Some Freedom.

There are no prison clothes and but few regulations. So long as a man does not "cheek" the guard or try to escape he can do pretty much as he likes. He can get up at whatever hour pleases him; if he does not care about washing nobody will persuade him to use the very small basin that stands by the door and looks more as if it served as an ash tray than anything else. If he chooses to wake the night echoes by singing songs and if his chums don't object, the sentry rather likes it than otherwise, as it helps to keep him awake as he tramps up and down the corridor outside. So in this room there is a certain amount of freedom, which the prisoners use in different ways.

The thing that strikes one the most is the amount of gambling that goes on. In all parts of the room are little groups of men trying to win something, if it is only a cigarette, from their comrades. Some have a few greasy cards and are indulging in a sort of prison poker. Others are content to try their luck at pitch and toss with a copper piece—the czar's head loses and the imperial eagle wins. Incredible as it may seem, some of the ragged articles of clothing have passed through half the hands in the room—won at cards or pitch.

The group near the man who is mending his nether garments is so dense that it is hard to get near it. Some ingenious prisoner has improvised a roulette, which enjoys a huge success. It is worth seeing. A square wooden stool, which serves in the prison for a chair, is used as a table. On it is a prison plate of enamel, turned upside down and roughly marked and numbered evidently with a hot iron or poker. A piece of bone, cut and polished as well as a prison knife will allow, serves as a needle or indicator which is spun around by the owner in true Monte Carlo style. The game is followed with breathless interest, but the inventor will admit none to it who have not cash—cigarettes and wearing apparel are not allowed.

"Have you got anything to lay?" he asks each newcomer, "for if you have not you can clear off and not interfere with those who have." When a soldier comes in to see what is afoot, he, too, takes a hand at the game, and tries his luck. But he is a privileged personage, and can stake a cigarette if he likes. He is on the best of terms with his charges, and especially with those who have a little cash. One man is trying to read, but the din proves too much for him, and tossing away his paper, he calls to a red-haired youth of Jewish persuasion to play at leap frog. This calls away spectators from the poker and pitch; but the crowd around the roulette table thickens till the owners of the coveted game make a lunge forward and send some of the idlers spinning.

Fights are by no means rare in the common rooms. One man will accuse another of cheating, or express political views which do not please some other occupants of the room, and spoons, platters and tin mugs fly about till a sentry puts his head in the door and vows he will cool their brains with the butt of his rifle if they are not quiet in the tenth part of a second. Generally this threat has the right effect; but sometimes the brawl ends in a tragedy.

Every day these men go into the prison yard or garden for exercise. Some of the prisons have once been palaces, and the Paviak prison in Warsaw has a large yard. Here the prisoners can walk about for half an hour, when their friends climb up the wall, which is not high, and pass the time of day. Women with baskets full of sausages, rolls, cakes, fruit and cigarettes come and sell their wares to the prisoners, who find the regulation fare of potato soup and pickled cabbage or cucumber monotonous. Here the uproar over the bargaining, which is enlivened with jokes and compliments, would do credit to the market round the corner.

Ingenious Escape.

This happy-go-lucky way of letting prisoners see outsiders is responsible for many of the escapes which are always occurring in Russia. The members of the military guard, who accompany the men when they take exercise, joke with the market women and forget their charges. One young prisoner, named Finklestein, ran off the other day in the most barefaced fashion. A sister dressed as a market woman, entered the yard with what looked like a goodly supply of rolls. Finkelstein and his friends at once surrounded her, crowding out the sentries. But the next day when the roll call was made, he was missing. His sister had hidden a woman's cloak, skirt and handkerchief under her rolls, and he quickly changed, whilst his fellow prisoners pressed round and walked out with her as quietly as possible a few minutes later. After that all the women were searched before admittance—but only for a day or two, when the authorities forgot the incident.

Another man escaped from the same prison by running races with his friends and leaping over the wall when the sentry was busy calming a violent quarrel which had suddenly arisen at the other end of the yard. Though the soldiers ran after him and there were many people in the street at the time, nobody troubled to stop him and he got of. A few weeks later the governor of the prison got a post card from him, asking after his health and stating that the air of Switzerland was doing his own a lot of good after the heavy prison atmosphere.

Refractory prisoners are deprived of the daily exercise and of hay mattresses—a luxury for the cell inhabitants. But lately this punishment has become so unpopular with the prisoners that as soon as any of their comrades receive it they show their solidarity by breaking doors, windows, shutters and stools. Even their enamelled mugs and platters are sacrificed to the good cause and batttered out of recognition. Then the soldiers have to be called in and the butts of rifles come into play. But it is impossible to separate the troublesome ones; for all the prisons are full to overflowing. The aristocratic prisoners—that is those who can afford to bribe the warders—live in cells. They are often as crowded as their friends in the common rooms, but it is considered "the thing" to get into one if possible. Here, too there is more chance of escape, as there are no jealous comrades to give hints to the authorities.

The favorite way of escaping from the cells seems to be digging tunnels under the floor to beyond the outside wall. Prisoners say it is more exciting than gambling and a good deal more profitable. They take turns to dig at night, using the legs of their stools, their mugs and their knives and forks. In the morning they put the earth they have dug up in their trouser pockets and behind their shirts and empty it out in the yard when they go for exercise. If they think the sentries are suspicious they leave off for a few nights. In the day time the hole is covered by a stool or clothing to make it look as innocent as possible. When larger enough the prisoners squeeze through and trust to their luck to pass the guards.

Some escape in a more daring way. They seize the head warder when he comes round, gag him, take away the keys and after opening the doors of their cells, march in a body to the gates, which are generally guarded by only two men, rush them, take away their rifles and march off in triumph. The soldiers will not follow them unless an officer happens to come along and order them to, because they are too indifferent to care about half a dozen prisoners out of the thousand or so they have within the walls.

Escaped prisoners have been known to walk boldly into the first likely house and obtain food and clothing. If they are "political" people are sorry for them; if bandits, they are so afraid of them that they would give them anything they asked for.

The women are generally kept in separate cells, though in some prisons there are what is called "married quarters." Men and women take exercise together, when "courting" evidently goes on, for there have been several marriages in prisons lately, some in cases when one of the parties is going to be exiled and wishes to have the benefit of a companion; others when the man is condemned to death and wants to give his name to his beloved before he perishes for the "cause." Such marriages are performed by a priest called in by the parties and in the presence of the higher prison officials, generally the governor himself, who makes a present to the bride. A collection is also made for her amongst the prisoners and many a little trinket has been kept in memory of these occasions.

Counterfeit Money in Jail.

Thus life goes on in the Russian prisons people drink vodka, play cards, make love and marry as in the world outside. But some prisoners in Radom hit upon as novel a way of passing the time and raising the wind as any. They had been false money coiners and meant to carry on their trade inside the prison. After a few days they made arrangements with the head warder, who agreed to bring the plant and pass the coin when it was made. The men had a cell to themselves and were warned of the approach of the governor by the warder, who removed all the implements to his own quarters when he saw danger ahead. They coined money for over six months, and might have been coining it today, had not the warder's wife been arrested as she was passing some of it in the market. Nobody was so astonished as the governor, who had not the slightest idea that the spurious money which had been flooding the town for the last six months came from his own private prison. How the plant was smuggled into the building seems a mystery, but the whole system of surveillance is so lax that as a local wag said, the next thing they would be making in the prisons will be bombs and printing revolutionary literature.

Such a lax prison system reflects no credit on the Russian government. But it is far less discreditable than the stories of horror and atrocities which are published broadcast as typical of the way Russian prisons are run. It is only fair that the other side—the normal side—of Russian prison life should be presented. Cruelty is not a Russian characteristic even among the governing reactionaries.

The Marconi System of Wireless Telegraphy

The world is becoming smaller by degrees, and beautifully less. The old world is not by any manner of means so far distant from the new as it was five years ago, but it is not only under the keel of the great liners that the time measurement of the Atlantic has dwindled with the passing of time, says the Montreal Witness. The cable has played its part in the world's shrinkage, and now the wireless telegraphic system is so carrying on this evolution for the benefit of mankind that it is only reasonable to believe that in the not-far-distant future, continents will be even more accessible for the purposes of communication than the Marconi-fitted ocean-going steamers are today.

And for this universally appreciated boon we have to thank the systematic classification of the scientific experience of Mr. G. Marconi, who in this matter has indeed penetrated the constitution of nature and unrolled the mysterious pages of its history, until wireless telegraphy extends to the high realms of the marvellous from the rock bottom of scientific truthfulness. It is really wonderful to think of a message being transmitted from one sensitively tuned instrumnt on the Cornish coast of England; to think of it maintaining its form and shape on waves of ether—this medium of extreme tenuity and elasticity which is diffused throughout all space; and to think of it being received at the station to which it is directed on this side of the Atlantic and recorded correctly on an instrument tuned to a sensitiveness corresponding with the transmitter so that there can be no overlapping, or stealing, or breaking of messages between one point and another. Truly, the story of the Marconi telegraph reads like romance. Substantial facts prove its triumphs, which, like those of truth, are most glorious and as "Marconigram" is now a dictionary accepted word so the system of telegraphy which it implies is a reliable and practical business force in the world. Its development within the last few years has been marvellous, even in an age when scientific marvels are common.

The possibility of telegraphing without wires by means of electric waves in free space was foreshadowed by Dr. H. Hertz, in 1887 and 1888, but the art received genesis in 1895, in the mind of Mr. Marconi, and was given its most prominent impetus, when, in 1898, using vertical wires, 80 to 100 feet high, at each station, and a ten-inch spark induction coil and an improved 'coherer,' he succeeded in transmitting wireless signals a distance of about forty miles, which distance within another twelve months, by using still higher vertical wires, and a more improved aparatus, he increased to two hundred and eighty miles, over water.

Since then the progress of the system has been rapid and sure. It has now reached a high stage of development and, as will be shown, is ready to do commercial business throughout the world.

About four years ago Mr. Marconi succeeded in sending messages from Poldhu, in Cornwall, England, to New York, and for some time his company had a contract with the London Times correspondent to send his messages by wireless telegraphy, but Mr. Marconi found that the station was not suitably equipped to do business on a commercial basis. Therefore the station has been removed to Glace Bay, near Sydney, C. B., and the distinguished inventor has now established a communication from the long-distance station there with the coast of England. He is now in England tuning the apparatus there to the proper pitch and ere long the regular transmission of wireless messages between England and Canada will be an accomplished fact. Towards this work the Canadian government has contributed eighty thousand dollars. With the perfection of the system to the extent already indicated, he estimates private wireless messages will cost ten cents a word, while press messages and business telegrams will be charged five cents a word.

The public is beginning to realize the importance of this system. Trade and commerce, as well as the individual, are the richer for it. You cross the Atlantic and it need be only during a passage of about one hundred miles at the present time that you are not in communication with the shore on one side or the other. Some of us can recall a passage not so very long ago when it was a necessity to "pick up" the news of the times after a ten or twelve days' sail. To-day the passengers on many of the trans-Atlantic vessels enjoy the luxury of the daily journal with the first meal every morning, the best news of the world having been received through the medium of the wireless telegraphic service, sent direct from shore to ship, and printed on board ship.

The normal range of an ordinary outfit for a steamship is about two hundred miles, but if there is a long-distance apparatus on the boat the messages are received all the way across the Atlantic, first from one shore and then the other. The benefits and advantages are obvious.

On another hand, the wireless system is of incalculable importance and value to coast navigation. Its completeness and efficiency in the St. Lawrence and on the eastern coast of Canada, including Newfoundland and Labrador, has been a great boon to navigation in the matter, among other things, of reporting icebergs and fogs, and in making the passage of steamers at dangerous points safer than before. To be more explicit; Recently a lightship moved from its position, and had incoming and outgoing ships taken it in the usual manner as their guiding course, disaster would have inevitably followed, but Marconi messages warned them against being misled, and accidents were averted. For a ship to be without the Marconi apparatus, therefore, looks very much like neglecting a very important if not an absolutely necessary means of insurance.

Again a veil of fog may "hold up" a boat some distance at sea; at the same time, the weather is clear nearer the coast, and there is no need for the ship to wait. A Marconigram informs her of the fact; she accordingly goes ahead; time is gained; and time is money at sea as much as it is so on land.

Two hundred miles is about the distance from each of the short-distance stations which form the chain along the Canadian and Newfoundland coasts and far north in Labrador, and every station added—as, of course, it is intended to add them—gives an additional point of safety to the shipping. There are about thirty stations in Canada and Newfoundland, thoroughly equipped with the system and at work day and night under the supervision of the Marconi Wireless Telegraph company.

These stations include Fame Point, Que.; Grosse Isle, Que.; Heath Point, Anti.; Belle Isle, Lab.; Point Armour, Lab.; Point Au Maurier, Que.; Cape Race, Nfld; Halifax, N. S.; Cape Sable, N. S.; Sable Island; St. John, N. B.; Cape Bear, P. E. I.; Quebec; Father Point, Que.; Clarke City, Que.; Battle Harbor, Lab.; Domino, Lab.; Indian Tarbor, Lab.; Pictou, N. S., and North Sydney, C. B.

The usefulness of the Marconi system was illustrated in a striking manner during a gale some time ago on the Labrador coast, when so many vessels were wrecked. At Belle Isle seventeen small craft were lost and fifty-five men thrown ashore on the island; at Indian Tickle and Domino thirteen schooners were totally wrecked. By means of the Marconi station at these points it was possible to rescue the shipwrecked people landed there and at other places along the coast, almost immediately; where otherwise they would have had to remain a long time and endure much suffering before they could be reached or relieved.

The Hon. H. J. B. Woods, the postmaster-general of St. John's, Newfoundland, writing of this incident, states: "There can be no doubt that these stations are a boon to the people doing business on that coast and the extension of the system further north is a question of only a short time."

One of the local newspapers commenting on the matter, said:

"The remarkably successful way in which relief has been sent almost instantly to these poor, wrecked fishermen and their families, is an illustration of the triumph of modern science and the Marconi wireless telegraph. The lighthouse keeper at Belle Isle was in communication with the authorities in St. John's all the day, and through the Marconi station on the Labrador coast the steamers were ordered to the rescue and the anxious friends of the wrecked crews were not kept a moment in suspense about them.

"On Oct. 9, 1867, a violent gale swept the Labrador coast and destroyed forty schooners, with terrible loss of life. The contrast between the delays in getting news, the slow process of sending relief by sailing vessels, and the consequent suffering and actual death from starvation and exposure then, and the prompt methods of 1906 are very striking."

The Marconi system has been adopted for exclusive use in the British navy, by the Italian government in all departments, by Lloyd's Agency, and in all quarters of the globe. There are over two hundred commercial stations altogether.

It is established in all navigable waters, and on every coast line in the world. Marconigrams have been transmitted across more than three thousand miles of ocean, from England to Russia over alternating route of land and sea, from England to Italy; across the Continent of Europe and the Alps, and on ships at sea over two thousand miles from the base of operation.

Mr. Marconi was born at Villa Guffone, near Bologna, Italy, on April 25, 1874, and was educated at Leghorn and Bologna university. From an early age he took a keen interest in electricity, and when the news came in 1888 that Professor Heinrich Hertz had shown that a disruptive electrical discharge causes electro-magnetic waves to radiate through the ether travelling with the velocity of light, young Marconi promptly conceived of the possibility of applying the Hertzian waves to telegraphy. He was successful in doing this in a few short years; he continued, and is continuing, to make the system more effective and far-reaching, and today, at the age of thirty-three years, his name is famous throughout the world.

The Marconi Wireless Telegraph company was first incorporated in 1897, and five years ago it established itself in Canada, with Mr. J. D. Oppe as general manager. His enterprise has led, and is leading, to very important development in this country.