city, for \$55,000. The heirs of Mr. Stevens say that he spent over \$2,000,000 upon his pet object in addition to \$500,000 allowed by the Government. In his will was a codicil ordering the expenditure of \$1,200,000 making the total cost of the vessel \$3,700,000. Mr. Laimbeer was given six months to remove his purchase, but for half of that time he turned it over to the Stevens Institute of Technology, for the use of its students. In consequence, Prof. R. H. Thurston was able to give his pupils three months of the most interesting practical study that has ever been available in this part of the country.

The dismantling of the hull occupied the balance of the time allotted to the purchaser. On no day during this period were there less than 40 men at work, while at times the number ran up to 100. The woodwork was all found to be of the finest Georgia pine in high state of preservation. That used in the sides of the hull was in layers to the thickness of 5 ft. 6 in. These layers were dovetailed together and secured by bolts 4 ft. long. In and around these joinings creosote was packed in large quantities, and, although this wood had been in place for more than 20 years, it was found to be in better condition than when freshly cut. All the skill of the workmen and the strength of tools could not force the layers of wood apart, and the work was finally done by burning. It was found to be exceedingly dry and susceptible of high polish, and, as has been stated, a large quantity of it has been used in the new cottages built and building on the south shore of Long Island. From the hold were taken two engines of 6,000 horse-power each, made expressly for use in a twin screw vessel, and, therefore, worthless. These were broken up and sold to the Delamater Iron Works, from whence they came. In addition to the two propelling engines, there were sixteen driving engines, which were preserved intact and taken to the coal mines in Pennsylvania, where they are still used as superior to any new inventions. Over 2,000 tons of iron plate were taken from the vessel and sold to the Cataisagua Iron Works, in Pennsylvania, and 33 per cent. of it was rolled in this country. The balance was sent abroad. The bolts used in the construction of this vessel were made in Scotland for that purpose and possessed unusual tensile qualities. These were in good condition after their long years of service and were shipped to England, where they were used in the manufacture of shot-gun barrels. When all the movable articles had been carted away, the two pointed ends of the boat were chopped off and the immense hull parted with its own weight. The labor of collecting the remnants was then comparatively easy. Immense quantities of giant powder were used, however, to reduce the bulk of the iron to a mass small enough to be carted away. There remains intact to-day but one article that was used on board the "Stevens Ironclad Battery." It is a large bronze bell 4 ft. in circumference, and hangs in the tower of a school-house in Tenafly, New Jersey.—*The Stevens Indicator*.

THE AIMS AND OBJECTS OF THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS.*

By P. M. ARTHUR.

MORE than 800 locomotive engineers were in Hartford in attendance upon the "union" meeting of the Brotherhood of Locomotive Engineers, on April 25. They came from thirty-one different divisions, representing Massachusetts, Maine, New Hampshire, Virginia, South Carolina, New York, New Jersey, Pennsylvania, Canada, East St. Louis, Rhode Island, and Connecticut. This was what is called a "union" meeting, held in accessible places about once a year. It is not the annual meeting. The object of union meetings is to discuss whatever matters may be of interest to members, and to seek the advancement of the order; for the brotherhood is in every sense a progressive one.

Allyn Hall was filled in the evening by an audience anxious to learn of the aims, objects, and methods of the brotherhood, and to Grand Chief Arthur was given the closest attention. The meeting was called to order by Chief James A. Brennan, of the Hartford division, who presided and introduced the speakers. Grand Chaplain Everett, of Philadelphia, opened the session with prayer. Chief Arthur was the principal speaker of the evening. He is a ready speaker, presents his ideas in a very forcible, convincing manner, and appeals effectively to the intelligence and manhood of the workmen. Many times he was interrupted by applause.

CHIEF ARTHUR'S REMARKS.

This, perhaps, is to many good people of Hartford an unusual gathering for a Sabbath evening; but I trust that, as you go from here, you may feel that while some of you have absented yourselves from your churches, your time will have been profitably spent. I can assure you, ladies and gentlemen, that you will learn no evil here. It is unfortunate that we, as railroad men, have to seek the Sabbath day to hold our meetings in order to get any great number of our members together. We belong to that unfortunate class of men who are called upon to perform duty upon the Sabbath day as well as upon the week day. Locomotive engineers cannot, when they please, leave their engines and attend to their own personal affairs, as is the privilege of the merchant, the professional man, or even the man in the shop. We cannot stop our trains. The public demand that they be run, and we must obey. Hence we seek to hold what we call "union" meetings on Sunday, knowing that by so doing we get a much larger number of engineers together.

When I was invited to come here to Hartford to hold a meeting, I was asked whether or no it would be best for us to hold a public meeting in the evening. I replied that if the people in Hartford are not acquainted with our order, then by all means let us have a public session. Because, we want the public to know what our brotherhood is and what our aims, our objects, and our purposes are; and we willingly leave it for you to form your own opinion as to whether we are entitled to the support of the public.

Like all other organizations, we have had a beginning, and ours was indeed a small one. And I think

what I shall say concerning our organization ought to convince the workmen at least of the necessity of being well organized, and then of having that organization intelligently conducted so as to protect your interests. In no other way can the laboring men protect their interests so well as by well organized effort.

ORIGIN OF THE BROTHERHOOD.

Twenty-three years ago this month the Brotherhood of Locomotive Engineers was founded in Detroit, Michigan. The first division consisted of twelve members. The idea was conceived by a few men employed on the Michigan Central Railroad, who realized the necessity of doing something to ameliorate the condition of locomotive engineers. It was known as the "Brethren of the Footboard," a very appropriate name for those days. Then the idea seemed to prevail that all that was necessary to belong was to be an engineer; and when the brotherhood had become established, the idea was that the principal aim of it was to dictate to the railroad companies what they should do and what they should not do. The founders of this brotherhood had never intended it for any such purpose. Our motto is, "Do unto others as you would that others should do unto you"—the golden rule. A short time after No. 1 was founded, they started out to organize divisions in different sections of that State and other States, and before long twelve divisions had been established, and in accordance with a previous arrangement among these subdivisions, the national division was formed. Twelve delegates assembled in Detroit, and created what was known at that time as the "Grand National Division of the Brethren of the Footboard."

As time went on, division after division was formed, until at the close of August, 1884, we held our first convention in Indianapolis with 44 delegates. We realized at that time that something was necessary to be done for our brethren across the line; so at that convention the name was changed to the "Grand International Division of the Brotherhood of Locomotive Engineers," so that men in Canada might become members. At the convention in Boston, in 1866, a resolution was introduced and adopted authorizing the publication of a monthly magazine. We started out with the determination to make our monthly magazine a success. This little publication of ours finds its way into the homes of thousands of engineers all over the continent, and to-day its circulation is 17,000. It is the means of disseminating useful and practical knowledge of great benefit to locomotive engineers; its pages are open to all its members, wherein they may express their opinions as locomotive engineers. Here you may also find the names and numbers of our subdivisions. We call them divisions instead of unions or lodges. "Division" is a railroad term. We have in this magazine a list of all our divisions, their location, names of officers; also, a list of all men of bad character who have been in the brotherhood and have been expelled because of intoxication, dishonesty, or immoral conduct. When a brother is, after a fair trial, found to be guilty of an offense, he is punished and his name is published in this magazine; and it has indeed had a wonderful effect upon many men who were inclined to go the wrong way. Many a man is restrained from evil because of the mortification of exposure, and this fact alone has kept lots of them in the right way. You might suggest that this was unjust. I answer by saying that we do not do anything with the member except what he agrees to when he becomes one of us, and he can never find fault with us for doing what he himself has subscribed to. This method has been beneficial, not only to the members themselves and their families, but also to the communities in which the men live and to the railroad companies; for it has thrown around these men a restraining influence which has been felt all over the country and has been the means of building up many a man among the locomotive engineers. Had not such a check been put upon them, probably a large number would to-night sleep in a drunkard's grave.

In December, 1867, we established what we call our insurance association, which is, to my mind, one of the grandest features of our brotherhood. It is conducted upon the assessment plan. We pay to a member's family, at his death, \$3,000. If one of our number be so unfortunate as to lose a hand, an arm, or his eyesight, we pay him \$3,000. And in the sixteen years that it has been in operation, we have paid to the families of members, and to injured members, \$1,850,000. Besides this, we have paid to needy and distressed engineers \$500,000. The brotherhood has elevated the locomotive engineers of this country so that they have become a credit to themselves and the railroads. Twenty-five years ago, and I say it indeed with regret, a railroad man as a rule was regarded with distrust, and men ran their engines often under the influence of liquor. In 1853, when the roads were consolidated between Albany and Buffalo, it was then called the New York Central. I remember when that company gave the members of the Legislature an excursion over the road from Albany to Niagara Falls. On the return trip into Schenectady, where I lived, the crew of the train each received from the superintendent \$5, and I don't think there was one of those men who did not have a grand drunk on that money. Now, all this has been changed. It was then customary for all the eating rooms along the line of railroads to sell liquors, and it was always considered proper for all the men of a train

TO TAKE A DRINK

whenever they felt like it. To-day no locomotive engineer who has any regard for the brotherhood will be guilty of doing anything of that kind.

We have given to the railroads reliable, trusty engineers. "But," some persons may say, "you engage in strikes." Yes, that is true. We have not yet reached that point where we class ourselves under the head of anti-strikers. And I don't want any of you to forget that. But it is unfair to condemn any man upon *ex parte* statements. First learn whether the man be guilty before you pass judgment. In Scotland, you know, they say, when a man is tried and not found guilty, "not proven." We have had strikes, I admit, but what caused them? Let me explain the policy of this brotherhood as affecting those relations that should exist between employer and employee. We have on all well regulated railroads what we term a "grievance committee." When a grievance arises between the engineers and the company (and differences will arise just so long as there is capital and labor), the great

problem to-day is how to adjust them. My motto is, in the language of St. Paul, "Come, let us reason together," and if we can get the parties to look at it in that light, we will have no strikes. Let the men come together and discuss their differences, and then come to an understanding. Let the employer give the men under him to understand that he is interested in their welfare, and not that he considers them mere senseless machines. This policy of the brotherhood is one of the best, and, I am glad to say, it has been copied by some other organizations springing into life during the past few years, with excellent results.

When a difficulty arises, whether a question of wages or of runs, it is the duty of the "grievance committee" to wait upon the officers and use all honorable means to effect a settlement. If they fail, it is their duty then to send for the chief executive of the brotherhood. It then becomes his duty to respond to their call, seek an audience with the officers of the road, and exhaust all his efforts to seek an adjustment. If he fails, and it is his belief that the men should strike, he gives his consent; and that carries the support to the entire brotherhood. Whenever, during the past twelve years, we have been met by the officers of the roads, there has been no strike. Every strike by us has been caused by the blunt refusal, on the part of the roads, to recognize us. Now, who is to blame for the strikes we have had? For the first two years I was in office, we were

CALLED UPON TO SETTLE SIXTEEN

different cases, and we were successful in all of them. But we came to one case where, upon our proposition to talk the matter over, we were sharply met with, "I won't receive your committee nor have anything to do with them." That was the first strike. The same cause led to the trouble on the Grand Trunk line, and upon the Boston and Maine. What could we do, and still consider ourselves as men, when we had been promptly and positively refused recognition in every way, even for the purpose of adjusting amicably the difficulty? But since then, every difference has been adjusted by our brotherhood.

During the excitement of the past few months we have had disputes on seven different roads, and in every case our brotherhood's policy has settled them all. I have given you, my friends, the naked facts of all the trouble we have had as an organization; and I say here to-night that the officers of those roads, and those alone, were responsible for the trouble. I can say that, as far as I know, the locomotive engineers and the railroad companies are on excellent terms. The Connecticut River and Vermont Central roads advise their engineers to remain outside the brotherhood, and this advice is followed. As a reward for this obedience, the companies reduce the engineers ten per cent. in their wages. These are the facts. Whenever any of them speak with me concerning the matter, I tell them that I hope they will be reduced still another ten per cent. I say to you, ladies and gentlemen, that men who will not stand up in defense of their own rights, but who bend to the wishes of the officers and withdraw from an organization which no man who is honest can possibly object to, lack the essential qualities of manhood. No man has the right to say to another, "Thou shalt" or "Thou shalt not," and in the violation of this principle is where the trouble lies among the workmen to-day. We have no business to say that an employer shall employ or shall not employ this man. A man has the right to belong to any organization provided it is not contrary to the law. We have had railroad managers tell our men, "If you belong to that brotherhood, we don't want you." As to that class of men, I believe they ought not to have their own way always, because they are not always inclined to do right. Therefore, we say no man has a right to say to another that he must not belong to an organization. And, too, we have no right to go to the companies and say, "You must not employ that man." We oppose this way of doing things, on principle. Unless a man is a rascal,

YOU HAVE NO RIGHT

as superintendent or master mechanic to prevent him from getting employment elsewhere because he does not suit you; for he might suit somebody else. [Applause.]

We do not believe in dictation in any form, but we do believe in justice, in equity, and truth, and that when we have a difference and send our committee to the company, it will have a respectful hearing and be allowed to sit down and talk the matter over. Whenever this has been done, a satisfactory agreement has been the result. Some time ago we were in Chicago. We had a meeting with Mr. Potter, representing over 5,000 miles of road, and the committee numbered seventeen men. After several days of conference an agreement satisfactory to all concerned was reached, covering that entire distance. Who can object to a policy of that kind? The great trouble is there has been too great a chasm between capital and labor, and we should strive to bring them closer together. There should be no antagonism. There is no occasion for it. And though I want every laboring man to hold up his head and look his employer squarely in the face, yet I want him to remember that capital, as well as labor, has rights which we must respect. [Applause.] We cannot do without either. Both are essential to the prosperity of the country. There should be no clashing between them—there need be none.

As I said, I do not believe the workmen are disposed to pass judgment upon a man without first hearing from him. Not long ago I was called to Houston, Texas. Our men had some differences on the Houston and Texas Central road, and we were sent for. We went there, and on our return we missed the connection at St. Louis. We then went to a hotel, registered, and went into supper. When we came out, the clerk said half a dozen newspaper men were in waiting to talk with me. The trouble in East St. Louis was then in progress. I told the clerk that I should talk with no person whatever while in St. Louis. Now, newspaper men are as a rule pretty sharp fellows, but now and then they are too smart—they overdo the thing. The next morning we took the early train for Cleveland, where I live. Our train was delayed on the way, so that I did not reach home until late in the afternoon. Some of my friends seeing me, exclaimed in surprise, "Why, I thought you were in St. Louis; the papers say you are there!" I found in the Cleveland *Leader* a long statement, purporting to come from that paper's

* Address by P. M. Arthur, Grand Chief, delivered at a union meeting of the Brotherhood of Locomotive Engineers, at Allyn Hall, Hartford, Conn., on Sunday evening, April 25, 1886. From the *Hartford Daily Times*.

correspondent in St. Louis, saying that I was there in close communion with the Knights of Labor. Now, a good many railroad men believed that story. The fact is that while in the city of St. Louis, I did not speak to any individual except the hotel clerk. So much for that.

Again, I have been quoted as opposed to the eight hour law and as saying that it would give the workingmen two hours more for drinking and carousing. That is false. [Applause.] The workingmen ought to know me better than that, seeing I have been before them for so many years; and I challenge any man to put his hand on any action of mine which reflected discreditably upon them. [Applause.] I never have posed as a labor reformer, and I have no use for those men who

Now we have another organization that has sprung up, and since it has come into existence we have heard a great deal about it. It is called the Knights of Labor. It is an honorable name, and if any of them are here to-night, to them I say, if you expect to succeed and prosper, carry out the golden rule that I have spoken of this evening. Do unto others as you would they should do unto you, and your organization will succeed and prosper.

BE FAITHFUL AND JUST

to your employers; be true and faithful to the principles of your organization; and after having rendered the service due to your employer, hold yourselves erect, look him frankly in the face, and feel that you

adjoining, so as to make a secure junction. The bed is made about nine inches in length, and deep enough to permit the smaller end to come up flush with the larger. The poles are simply laid on top of the ground, except when the surface is very uneven, dirt thrown on each side and trampled down to form a solid bed. After they are in place, they are slightly trimmed down with an adz. When a crook of any kind occurs in the poles, it is of course turned down in laying the track. No cross ties are necessary, as the locomotives and cars are so constructed that they exert no lateral pressure. After a few trains have passed over the road there is no fear of the poles becoming displaced. Curves are made up of a succession of short poles, care being taken that the joints come opposite to each

A POLE ROAD LOCOMOTIVE.

do, for they are demagogues. Men are known by their works, as are trees by their fruit. When the trouble in Boston was in progress in 1877, men came to me and said, "Now is your time; you can be carried into public office on a high political wave." I replied that I wanted no political office; that it was honor enough for me to be the chief of this brotherhood. [Applause.] I tell you, my friends, when a man who is looking up as the leader of a labor organization, just so soon as he begins to dabble in politics then it is time for you to request him to resign, and put another man in his place. They care for themselves far more than they do for those whom they represent. Where is the blacksmiths' union? What has become of the coopers' union? And where is the union of the miners? The political ambition of their leaders caused them to fail of their object as unions.

What I did say about the eight hour law was this: "If the masses want eight hours for a legal day's work, give it to them for a fair trial; but I fear there are a large number of men who will not profit by it." Many of those sometimes called workingmen do not make good use of their time. I believe in working. Since I was 12 years old I have worked. And to that question I have never given any consideration further than to say, "Make the best use you can of the time God gives you; and if you want an additional two hours for the purpose of improving your mind, then I hope the law givers of the land will give it to you, and that you will appreciate it, and not loiter it away as many men do, I am obliged to acknowledge." My advice is, be sober, be frugal, be industrious, and practice a little self-denial for the benefit of those who are dependent upon your daily earnings. Above all, keep

are his peer. It is not clothes that make the man, but it is character; and without the latter no man nor organization can do anything but go down. So I say get character, and when the individual has character, the association of which he is a member will also have character. Unless you have character it will be but a little while before you will be forgotten. I trust now, my friends, that you all understand the position of P. M. Arthur on the eight hour law and also on all other labor questions. I am proud to know that the laboring men of this country are banding together for the purpose of protecting their own interests; and if they conduct themselves like men, they will command the respect of all fair-minded men, and as for the rest, you need care nothing about them. [Continued applause.]

Following Chief Arthur, remarks were made by Grand Chaplain Delos Everett, of Philadelphia; Brother Fennel of Oswego, N. Y., known as Shandy McGuire; and Brother Dennis McCarthy, of Providence, the temperance speaker; all of whom were heartily applauded. Brother Everett Stevens, now one of the railroad commissioners of Massachusetts, declined to speak on account of the lateness of the hour. After closing prayer by Chaplain Everett, the large audience went away with profound respect for the Brotherhood of Locomotive Engineers and its chief officer.

POLE ROADS AND LOCOMOTIVES.

As its name implies, the pole road is a tramway in which the usual iron or steel rail is replaced by poles in their natural state as they are brought from the forest. The principal service of such roads is for log-

other. The switching is readily accomplished in the ordinary way. Where heavy grades are encountered, it is the practice in some localities to place the locomotive in the middle of the train, and at the particularly steep grades to cut away half the train, push up the other half, uncouple, and return for the remaining cars. In this manner, trains of six loaded cars have been taken over grades of 700 feet to the mile with the use of only one locomotive.

The cars constructed for running on these roads were formerly very primitive affairs, and were drawn usually by oxen. With the improvement of the road, however, and the introduction of pole road locomotives, the cars have been correspondingly bettered, until now the whole equipment of a pole road enables it to render inexpensive and valuable service.

These roads have met with particular success in the lumber districts of the South. We illustrate a form of pole road locomotive and logging car manufactured by the Tanner & Delaney Engine Co., of Richmond, which are in use in this section. The locomotive is the invention of Mr. W. E. Cole, and is made particularly substantial to withstand the rough service for which it is intended. The driving wheels are thirty inches in diameter on the tread, and, as shown, are very heavy. They are driven separately by a chain having a breaking strain of over twelve tons. The motive power is transmitted from the crank shaft of the engine to the master shaft, on which the driving sprocket or chain wheels are keyed, through a spur and pinion of large pitch and face. The axles are mounted on a double spiral spring, and may be adjusted for any stretching of the chain. A water tank of five hundred gallons capacity is mounted over the boiler. It is a special

out of whisky shops, shun dens of infamy and the gambling table, and spend your time with your wife; and if you have no wife, and are old enough to get married, I advise you to get one right away. [Laughter and applause.] We were the first to form an association among railroad men, and now I am glad to know that we have the "Order of Railway Conductors," "The Brotherhood of Locomotive Firemen," "The Brotherhood of Brakemen," "The Yardmasters' Association," and an "Association of Superintendents"—all banded together for one purpose, and that purpose, so far as I have information, is the same as ours—to protect our interests and to promote our welfare; and I say God speed them all!

ging or other temporary purposes. They have been in use in different parts of the country for over twenty years, and have been constructed in almost every imaginable degree of crudity. It is only recently that they have been so far perfected as to possess any engineering interest. A first-class, substantial road built of poles will cost anywhere from seventy-five to two hundred and fifty dollars per mile, according to local circumstances. The poles employed for rails should not be less than nine inches in diameter at the smaller end, and should consist as far as possible of the heart, or they will decay before they wear out.

In the best roads, a bed is hollowed out in the butt end of the pole to receive the small end of the one

feature of the machine that the driving wheels move independently of each other, both as regards their rotation and lateral play. Each is driven separately from the master shaft, and will perform its function of draught without regard to the work of the other wheels. The whole of the machinery is mounted in a flexible manner, so as to be uninjured by travel over the roughest kinds of roads. The cylinders of the locomotive are seven inches in diameter, and have a stroke of twelve inches. Its total weight without water is 23,900 pounds; and when hauling a train of six loaded cars, or 10,000 feet of boards in all, is calculated to make a speed of about five miles an hour on grades less than 200 feet to the mile.