REAL FEATURES OF CHRIST

Conventional Picture Believed to Be a True Likeness.

SEARCHING OLD RECORDS OF ART

Famous Frescoes of the Catacombs and the History They Reveal—Ancient and Modern Portraits Compared.

The Christian world has for centuries recognized a likeness of Christ which has become as clear and definite as a true portrait could be. Yet, no doubt because Christ's humanity, in our minds, disappears before His divinity, few among us have ever thought of the possibility of that traditional figure being a true portrait. Christ's mission, his teaching, the whole spiritual side of his life, have so absolutely overshadowed the purely human side of his life that we have not tried to imagine how Christ really looked. When we stop to consider this subject we realize that there is no possibility of his having been different in his appearance from ordinary men, although we know that there could not but have been a something about him which revealed what lay beneath the external envelope. In his eyes—windows of the soul—his disciples who knew and loved him, the poor people of the villages of Galilee who saw him but once passing, must have seen the light of the perfect inner life, whose purity and beauty men of all ages since have vainly tried to grasp completely. And the expression of his countenance, his sternness and his smile, his kindly and unselfish bearing, could not but have revealed what he really was.

This we feel, but a most interesting book, just published, for the first time takes up in a modern, scientific way this subject of the probable likeness of Christ. Its author, Sir Wyke Bayliss, presents the facts with remarkable clearness and force.

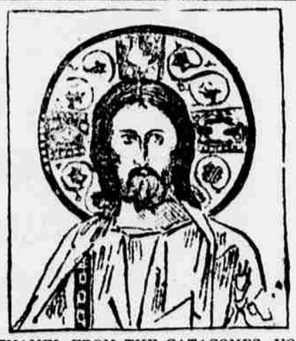
Oldest Records Are Those of Art.

The first point to be considered is that the direct teaching of the story of the Christ was, at least for the first 1,000 years of the church history, committed to art rather than to letters. Since the invention of printing the written word has taken the place of pictorial representation, but forty generations had lived and died and the world had become Christian before the sacred text was in the hands of the people and the people educated to read it for themselves. In the preface to the revised version it is stated that the earliest manuscript of the Old Testament of which the age is certainly known bears date A. D., 916, and that, in the case of the New Testament, nearly all the more ancient of the documentary authorities have become known only within the last few years. This establishes the important fact that, if the nearness of the record to the event counts for anything, the famous frescoes in the Catacombs have an advantage over the bible in that respect of nearly 1,600 years.

Against this fact theologians from Irenaeus to the present very reverent dean of Canterbury have generally held the opinion that the world and the church have lost forever all vestige of trustworthy tradition concerning the aspect of Jesus on earth, mainly because the authorities upon which they have drawn are not historical, archaeological or artistic, but always solely theological, and also because the church has never really touched the possible verisimilitude of the likeness of Christ, but has dealt only with the question whether any representation, true or false, should be endorsed or permitted by the church. Certain of the theologians of the second, third and fourth centuries of the Christian era objected to the attempts of artists to portray the likeness of Christ.

Early Portraits Argue Reality.

These first pictures of Christ in the catacombs were indeed ugly, which is in itself strong evidence that they were honest attempts by inefficient artists to represent one whom they had seen or whose portrait they had seen and whose type they knew well, and not ideal creations of their own imaginations. But while these early fathers objected because the ugliness of the outward form seemed to them a slur upon the divinity of Christ, to us who see in that fresco of the catacomb of San Calisto (here represented only a trifle larger than the original) there is no ugliness of the outward form, but, in spite of the weather-beaten, spotted and half effaced image, we cannot but discern the spiritual beauty.



ENAMEL FROM THE CATACOMBS, NOW IN THE VATICAN MUSEUM.

This Calistian portrait, the most precious of the old images of Christ, has been snatched from "the cruel tooth of time" by a most careful and beautiful drawing by Mr. Heaphy, which is preserved in the British museum. When that was made, fifty years ago, the original was a faint shadow on the wall. It is all gone now. What a pity that! No photograph was taken of it, as would undoubtedly be the case at the present time, but in the explorations which are constantly going on in that extraordinary city of the dead these catacombs that extend under the whole Roman city and a part of the Campania, with their galleries above galleries, where part by part are opened up and closed again and their sacred relics taken away to the vatican, we may confidently hope for new examples of early portraiture of Christ.

Portraits in the Catacombs.

All of these ancient portraits in the catacombs, on glass, in mosaics or frescoes, which are to be found in the churches of Rome, are the earliest records we have of the first Christians, and the fact strikes one at once that there is an extraordinary similarity in all these representations of our Lord. Full faces, full length figures, or heads alone, all have that same type. In any group of figures we can recognize at once that typical face of Christ. It was then, and is now, the only likeness which we recognize at once, which is common to every form of art, to the mosaic, to the glass, to the enamel and to the fresco. It is a fixed type, which no clumsy hand has been able to alter beyond recognition. This shows conclusively that the likeness of Christ which we find in the paintings of the Renaissance, that marvelous drawing of Leonardo da Vinci, here reproduced, and which is a study for the head of Christ in the Last Supper, although without the traditional beard, was not invented at the period of the Renaissance, but that it already existed. It was not simply a matter of tradition, either. The great masters, Raphael, Michael Angelo and Titian, could not but recognize that in it was something greater, something truer and more definite than they could themselves create, and in spite of the fact that they were men of marked independence of thought and strong national feeling, they were content in this, the most important function of their art, to lay aside their invention, their independence and their nationality, and to be as one in accepting humbly from other hands the likeness of Christ.

PORTRAIT OF ST. PAUL, ENGRAVED ON GLASS—FOUND IN THE CATACOMBS.

From the fourth to the seventh century the artists who wrought in mosaics in the basilicas inherited that likeness from the catacombs. They were Byzantine artists, who reproduced with slight differences of style a plainly marked and characteristic likeness, transmitted, as all tradition, from generation to generation. It was fortunate that the chief characteristic of that Byzantine art should have been the perpetuance of a certain model carried out in every detail in a perfectly formal and hieratic way. It is to the limitation of the materials out of which the beautiful mosaics of the basilica were designed and to the artists who made them that we are indebted for the preservation of the likeness during the dark centuries of the middle ages. Serene, solemn, dignified, they are a priceless inheritance to the Christian and to the artist.

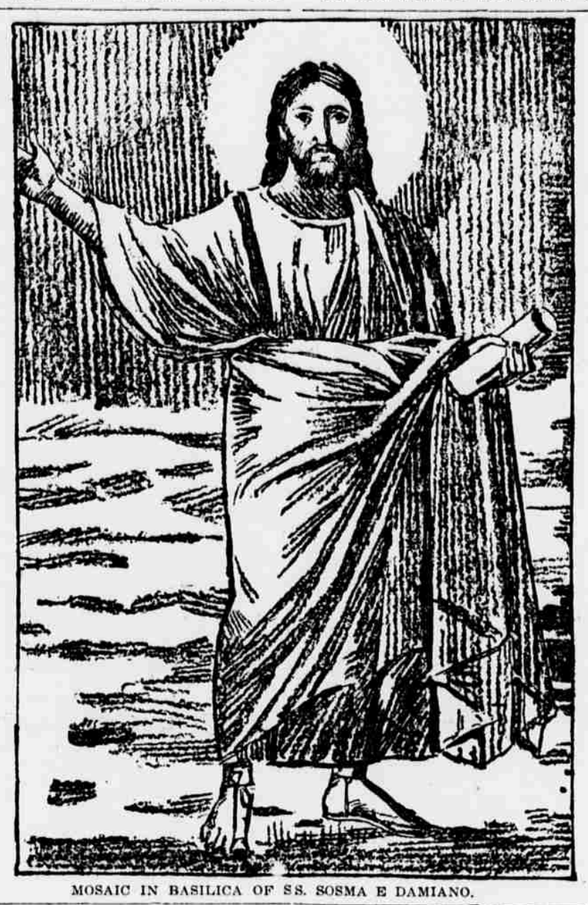
Proof in a Lock of Hair.

When there became two centers of authority, at Rome and at Constantinople, the Greek church prohibited the making of images of Christ and sanctified the likeness only in the form of paintings. These old, smoky, black Icons that we see yet in the monasteries of Russia and European and Asiatic Turkey have all come down to us from this period. In the Roman world the images of Christ in all forms were always allowed and the curious and significant fact is that both Greek and Roman churches retained the same likeness of our Lord from some common type. The fact that in the Greek pictures there is invariably a slender lock of hair detached from the rest and falling in the center of the forehead shows that there was a traditional likeness from which no artist dared to depart even in detail.

Now it is obvious that this traditional likeness must, of necessity, have been based upon something tangible. When the Greek and Latin artists made their pictures of Christ they had to satisfy a people who believed devoutly in some older likeness they possessed and with which they were familiar. The people would have been no more content with a new invention to represent ther Christ than their forefathers would have been content to receive ideal heads from the Greek sculptors they employed when they asked for portraits of their Caesars. Clearly the traditional likeness was derived from the catacombs. The dark corridors of those underground sanctuaries were the records of the life of generations of the early and persecuted Christians. The pictures that covered the walls of these chapels and graves, made for the eyes of those Christians, are of one doing the acts that Christ alone did and bearing the attributes that Christ alone bore, pictures that to them at least represented their Lord.

Most Wonderful of All.

The most beautiful and, at the same time, the most divine and most human of them all is the Calistian portrait. This loveliest and most precious of the remembrances of our blessed Lord, is, according to most competent authorities, the work of a Roman artist, a portrait painter, who must have himself seen Christ. But the authenticity of the commonly received likeness depends upon no one particular example. There are frescoes in the Vatican and in the Lateran museum in the catacombs, of SS Archili, a Nero of about the same period, which exhibit exactly the same striking type. It is touching to think that these likenesses were painted over the graves of the martyrs so that the face of their Redeemer might overshadow the place where they lay until once more they should see him as they had seen him before they fell asleep.



MOSAIC IN BASILICA OF SS. SOSMA E DAMIANO.

FROM A MOSAIC OF THE CATACOMBS.

Besides frescoes and mural engravings the catacombs are rich in anagrams, chalices, paterae of glass, in bas reliefs, in mosaics, enamels and cloth pictures, these last most fragile shadows upon linen. I give here examples of each one of these. The cloth picture, which is now one of the most precious relics of the Church of San Bartolomeo, Genoa, is said to have been drawn by St. Luke, who was an artist, and sent by the Lord Himself to Agbarus, the king of Edessa, to recover him of his sickness. The history of this picture goes back at least to the middle of the second century, and we have records to show that it was believed then to be authentic. Another and more probable story in connection with this likeness is that when St. Peter was a visitor at the house of Pudens, a senator of Rome, the daughters of Pudens, Prassed and Pudenziana, asked him what the Lord was like, and that the apostle with his stylus drew on the handkerchief of one of the sisters the simple outline which we see in this picture. That story is not only possible, but probably true. There is a third story to follow, which is the well known legend of St. Veronica. It is said that, when on the way to Calvary our Lord fell beneath the weight of the cross, the woman, St. Veronica, moved with pity, gave Him her handkerchief or herself wiped the sweat from His face and that thus the imprint of His features was left miraculously and vividly on the piece of linen.

Likeness on a Face Cloth.

The Veronica likeness, of which there are many, was simply a face cloth which had been laid upon the dead. These face cloths were sometimes marked with a sacred anagram or with some emblem of the resurrection, but there can be no doubt that, in many instances, the same desire to identify this with Christ and to express their hope and expectation of his second coming led men to paint his face upon their graves and led them also to cover with it the faces of their beloved. This likeness attributed to St. Peter or said to have been sent to Agbarus may have been drawings made on linen for this purpose, but never actually used, for they show no stains of the grave. But there are many, among them the ones in the Church of San Silvestro and in St. Peter, which have undoubtedly been darkened in the valley of the shadow of death. The darkness of the Veronicas, as these face cloths are called, is really the imprint of a face, the dead face on which is was laid. The likeness descerned through the imprint is a drawing made originally on the cloth and it is the likeness of Christ.

These are a few of the many witnesses which tell the same story. There are many more of them, all showing that the likeness which the Christians of the fourth century

"CHRIST BRINGING AGAIN THE FRUIT OF THE TREE OF LIFE"—GLASS RELIC OF THE CATACOMBS.

delighted to emblazon on the walls of their basilicas was not a new invention, but it had been the consolation of their forefathers during the dark period of their persecution. The pale, beautiful face that had overshadowed the graves of the martyrs, which had looked down upon multitudes of worshipers in the stately basilicas, was the same face that Christ had borne into the grave three days before his resurrection. So this verisimilitude of him had been in the catacombs for three centuries before it arose to live forever.

Adept Portrait Painters.

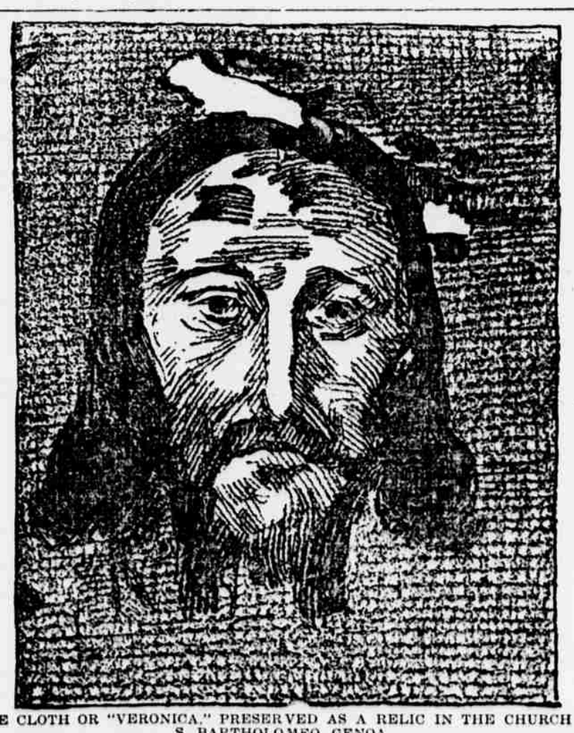
In looking over the treasures brought from the necropolis of Antinoe to Paris last year one could feel himself transported into the society of those Romans in old Egypt. Indeed the Roman world was devoted to the art of portraiture, and even in the lowest pictures of the decadence, even when there is no art, there is always a graphic likeness. That the early Christians could not be any different from the rest of the Romans of that period is shown by some of the precious relics of the catacombs bearing very individual portraits of the apostles. We publish here one of the apostle St. Paul engraved on a glass paterae. There are many such examples of direct portraiture of men whose names were familiar to the Romans of the first century and who are mentioned in the epistles, which show that portraiture, as distinct from symbolic or imaginative art, was not only lawful but was practiced by the immediate followers of the apostles. Thus we had the people accustomed to commemorate by portraiture not only their heroes, but their friends and members of their family. When banded together in the worship of a new hero, one greater than any they had known before and endeared to them by a stronger tie—that of love—one known personally to many of them and of whose likeness they could have obtained authentic information, how could they have helped find solace and comfort in preserving his cherished likeness? And, indeed, we see these people, driven to the catacombs, proceed at once to cover the walls and engrave upon their sacerdotal vessels, to bury with their martyrs, pictures representing the life, actions and attributes of their hero. It is too much to ask us to believe that the likeness they painted on their walls, engraved upon their chalices and buried with their dead was a sham.

As to the singular objection that has been raised regarding the authenticity of the likeness that in the early days of Christianity the belief in the divine nature of Christ was so universal, so absolute and so overwhelming that men did not dare to represent him in his human form, but through emblems and symbols, it sems an absurd theory when one confronts it with the facts which Sir Wyke Bayless enumerates. No doubt at times the portrait of Christ as a man has been regarded with suspicion by the theologians, who were afraid that the full recognition of the divinity of Christ might be impaired by dwelling upon the human side of him and lead to idolatrous practices. But, all the same, the likeness which never had been lost, but only obscured by symbolism, was brought forth from the catacombs and stamped on the arches of the basilicas as a triumphant declaration in the sight of all men that it was to be cherished forever as one of the essential elements in the evidences of the Christian religion.

AUGUST F. JACCACI.

A hot-weather beverage—A piece of ice, some sugar, lemon and a bottle of Cook's Imperial Champagne, extra dry.

A Maine farmer found a sheep missing from his flock during the recent snowstorm, and searched five days until he found it alive, under five feet of snow and not in bad condition.



FACE CLOTH OR "VERONICA," PRESERVED AS A RELIC IN THE CHURCH OF S. BARTHOLOMEO, GENOA.

DRAWING FOR THE HEAD OF CHRIST IN "THE LAST SUPPER," BY LEONARDO DA VINCI—ONE OF THE TREASURES OF THE ACCADEMIA-MILAN.

COMPRESSED AIR AS A MOTOR

New York Street Railway Lines to Be Equipped with Air Power.

CHEAPER AND SAFER THAN ELECTRICITY

Western Cities Preparing to Adopt the System—Interesting Details of Simple Machinery Employed.

NEW YORK, Dec. 23.—Within the next twelve months compressed air will be put to use in operating suburban and street railways in New York and other American and English cities. The question of power for the handling of such traffic has narrowed down to the alternative of compressed air or electricity, and the decision in favor of one or the other of these is likely to be influenced by local conditions.

For some years electricity has held the field without a dangerous rival, but there are abundant indications that from this time on it must share the honors with the new motive power.

The compressed air plant now being established by the Metropolitan Traction company in New York is nearly completed, and by the end of February forty air-motor cars will be in operation on the company's Twenty-eighth and Twenty-ninth street crosstown line. Following this a belt line connecting the ferries and railway stations and covering the hotel and shopping districts will be established. If the present plans of the Metropolitan company are carried out, all the cross-town lines in New York City, with one or two exceptions, will be equipped with air motors in the course of the coming two years.

Although the New York line will be the first in this country to be operated entirely by compressed air, it will not long remain the only one. One of the Chicago lines is to be fitted with air power during the coming summer, and negotiations for the equipment of a part of St. Louis' system are nearly completed. The officers of the American Air Power company, who control the rights of the compressed air system, have been in consultation recently with street railway men from a number of western cities, and it is expected that some of them will adopt air power soon on their lines.

Moreover, it is possible that the success of the American system, as demonstrated by its actual operation, may lead to its adoption on the London underground roads. J. Allen Baker, an expert engineer who was sent over to this country, recently returned to London and submitted his report. He compares compressed air with the gas power now in use on the Blackpool line in London and his conclusions are decidedly favorable to the former. Mr. Baker finds that not only is air power cheaper than gas, but it is superior in cleanliness and is noiseless in operation, two important considerations on an underground line.

On Railroad Suburban Lines.

In addition to these developments, it is said that the New York Central railroad is preparing to use air-motor engines in its yard operations and in hauling trains through the tunnel at the New York end of the road and on its Putnam division.

A compressed air engine has been used for some time in the yards of the Atchison, Topeka & Santa Fe road at Topeka, for switching, and is reported to have worked satisfactorily.

When it is added that a company is being formed in New York to utilize the air motor in running automobile carriages, it will be seen that 1899 promises to be a great year for compressed air in a number of ways.

The American Air Power company, which controls both the Hardie and the Hoadley motors, is capitalized at $7,000,000, and among those said to be chiefly interested in it are P. A. R. Widener, William C. Whitney and the other large stockholders of the Metropolitan Traction company, Colonel A. W. Soper of the Pintsch Light company, Henry D. Cook, Alexander McLeod, formerly president of the Reading system, and numerous men of importance in the financial world.

The use of compressed air as a motive power antedates electricity, although it is only within the past few years that the system successfully employed by the American Air Power company has been developed. As far back as 1879 an air-motor car was run on the streets of New York. In the following year an Englishman named Colonel Beaumont operated a compressed-air engine at Woolwich, but it did not meet with favor. In 1889 the city of Berne, Switzerland, adopted air for street traction, using what is known as the Mekarski system, and in the ollowing year a line was installed in France and another at Chester, England. In 1892 Samuel E. Jarvis built an air-motor car which was run on a specially constructed line in Detroit, and in the same year the Consolidated company of Toledo made some experiments with a car equipped with the Mekarski system.

None of these experiments were reported failures, but from none of those tried in this country did any important results follow. One difficulty encountered was in storing enough air to run the cars any considerable distance. The air was stored at low pressure and consequently the capacity of any ordinary car was sufficient to carry it only about four miles. The compressing apparatus was far from perfect and the experimenters were troubled by the heating of the air during the compressing process and by its freezing when expanded.

The development of compressed air traction, as we have it today, is chiefly due to Robert Hardie, a mechanical engineer and inventor, who carried on his experiments in the use of compressed air at high pressure for several years at Rome, N. Y., where the first successful air-motor car constructed from the plans now in use was put in operation.

The results of Mr. Hardie's experiments were embodied in the Hardie engine, built for experimental use on the Manhattan elevated railroad, and in a street car constructed for the American Air Power company. The latter was put in operation on the One Hundred and Twenty-fifth street line in New York on August 14, 1896. Two others of the same pattern were added a little later and the three continued to run successfully for nearly a year. It was the practical test to which these cars were subjected by actual service that induced the Metropolitan Traction company to adopt the air motor system for some of its lines. It was found that the cars ran smoothly, with less wear and tear to car and road equipment than the cables, that they were not affected by weather conditions and that they were less dangerous than cable or electric cars, as the entire 2,000-pound air pressure could be applied to the brakes or the motor could be reversed if necessary. The cost of operation was a little greater than that of the other cars on the road.

The Hardie cars employed in this experimental work were like ordinary cable cars in appearance, except that the space beneath the body of the car was protected by aprons extending along the sides. Behind these aprons, mounted on the car trucks, were the storage chambers, connected with the running gear by pistons similar to those employed in steam locomotives. An improvement on this driving apparatus was effected in what is known as the Hoadley motor, described as an "inside gear." This is the one now in use and in cars of this pattern none of the operating machinery is exposed to view.

Bottling the Air.

In the air power plant now building at West Twenty-fourth street and Eleventh avenue, New York, the power is developed by what is described as a three-stage compressor. In the first chamber the air is driven up to a pressure of about 100 pounds to the square inch. It is then cooled by a water jacket and enters a second cylinder where the pressure is increased. The cooling process is repeated and the air passes to the third chamber, where it is driven up to the pressure of 2,500 pounds to the square inch, at which it is to be used. For the third time the air is subjected to the cooling and drying process, after which it is conveyed to a series of connected Mannesmann steel flasks, where it is stored awaiting use. The purpose of the water jackets is to do away with the heat which naturally accompanies the compression.

Each of the air motor cars is fitted with a Mannesmann steel "bottle" extending lengthwise beneath the floor of the car. This bottle is a long steel tube with a capacity of fifty-one cubic feet. Before being placed in the car it is tested to a resisting strength of 5,000 pounds to the square inch. So that there will be no danger of breakage under service conditions.

The empty cars are run up to the charging stand in the power house and connected with the main storage chambers. Air is admitted to the car flask until the desired pressure—2,000 pounds—is registered by the storage gauge. Then the connection is broken, the air in the chambers being prevented from escape by a check valve, and the car is ready for a journey of from fifteen to twenty miles. The whole process of charging occupies only two minutes and in the event of haste can be completed in less than a minute, so that it will not cause delay even with a congested traffic.

While this charging process is going on connection is established with another chamber beneath the car and live steam is introduced to this compartment until a temperature of 300 degrees Fahrenheit is registered. This device is one of the most important improvements in the development of compressed air traction. It makes possible the reheating of the air before it is used, thereby increasing its efficiency 100 per cent and making it possible for air to compete with electricity in the item of expense.

As the cold air leaves the bottle beneath the car it passes through an automatic valve which reduces the pressure from 2,000 pounds to 150, the latter being the pressure at which it is applied to the motor. The air passes through the reducing valve to the hot water chamber, the heat thus applied to it causing an expansion which nearly doubles its working power. That is to say, each cubic foot of air, after being heated, carries the air twice as far as it could if it remained cold.

Machinery is Simple.

The motor mechanism consists of two link-motion, reciprocating engines, having cylinders seven inches in diameter and a fourteen-inch stroke. The power is applied by connecting and parallel rods direct to the crank pins of the four driving wheels. The entire weight of car and apparatus is mounted on elliptic springs, which give a smoothness of motion not obtained in the ordinary car. At the point where the air is finally set free, the pressure is so slight that there is no sound of exhaust. The only way in which the escaping current manifests itself is by a little puff of steam, such as is caused by one's breath on a frosty morning. This, of course, is due to the difference in temperature between the atmosphere and the air operating the motor.

According to its advocates, compressed air possesses many points of superiority for street traction over any other power at present in use. Edward E. Pettee, the consulting engineer of the Air Power company, says:

"Street railway engineers have long demanded an independent motor—one that should make each car automobile—so that an accident at a central power station might not result in tying up a whole system. This is provided by compressed air, and may be described as one of its chief engineering advantages. Perhaps its greatest recommendation from the point of view of the public is its safety. In case of control, it excels any other system that I know of. The high pressure air is always at command to set the wheels and can be applied by a simple wrist movement by the motorman.

"The entire mechanism is simple and does not require any special skill to operate. There is no noise, smoke nor odor. The installation is much cheaper than that required by electric power, thus effecting a saving in interest charges. It is never necessary to tear up the streets in order to extend the power. The cars can be run wherever there are tracks. In all these particulars I believe compressed air to be the most satisfactory power yet developed."

Whatever advantages compressed air possesses on the score of safety or esthetic qualities, the point which is likely to determine its final acceptance or rejection by railway capitalists is the matter of cost as compared with other forms of power. If it costs the railway company less for each car mile run by compressed air than it does with any power at present employed, compressed air will be installed sooner or later.

Cost of the New System.

On this point it is impossible to make a convincing comparison, for the reason that air has never been employed on a large system, and on such a road the cost of operation for each car mile is likely to be less than on a small line. For electricity, cable, gas and animal power approximately exact figures are to be had. In the following table the comparative cost per car mile is shown from figures compiled in New York and London. The figures given for air power are computed by a conservative engineer from the showing of the air motor cars in their trial service.

Animal	.17
Cable	.14
Electricity (underground)	.12
Electricity (overhead)	.10
Gas (London)	.11
Compressed air	.10 to 12

The cost of operating the three air-power cars run in New York was 20 cents per car mile, as follows:

Coal	$0.0433
Water	.0003
Oil and waste	.0013
Power plant labor	.0833
Conductor and motorman	.0868
Repairs	.0928
Total	$0.2018

The item of furnishing power at the station would be reduced from 8 cents to about 3 cents with a larger plant, and the cost of conductor and motorman would be materially reduced with longer runs. On the saving in these items, and on the improvement in the efficiency of their apparatus, the officers of the Air Power company base their expectation of rivaling the trolley in cheapness of road operation. Many railroad men believe that they will shortly prove their case by actual demonstration. At any rate, compressed air is likely to take its place as one of the great motive powers.