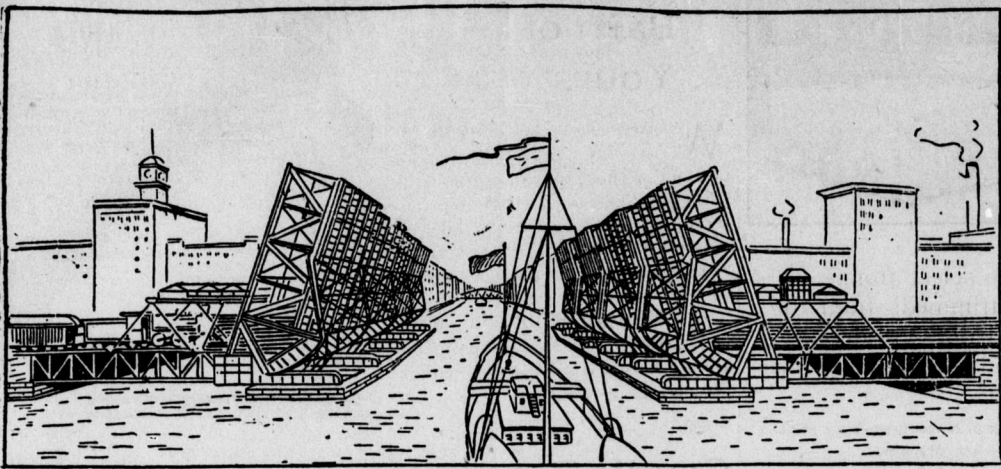


AN EIGHT-TRACK ROLLER-LIFT BRIDGE.



The Marine Review prints a description of an eight-track roller-lift bridge to be erected over the Chicago drainage canal near its junction with the Chicago River. It provides a clear waterway for navigation of 120 feet between the piers, at right angles to the centre line of the canal. On each side of the waterway provided for navigation is placed a main supporting pier. These piers are each forty-eight feet wide. They rest on bed rock, forty-four feet below city datum. The

piers are not solid; in each pier there are four cavities, which materially reduce the amount of the required concrete and masonry. The bridge consists of four independent double track Scherzer rolling-lift bridges, placed side by side, with a clearance of six inches between the adjacent trusses. The spans may be operated either jointly or singly, as desired, by two operators, one on each side of the canal. When it is desired to open the bridge the centre pins are unlocked by

SURVEYING BY MACHINE.

The Orograph, Which Has Been Adopted by the Army.

Mention was made some time ago of the "Orograph," a new instrument which has been adopted in the United States Army, and is intended to take the place of the engineers' chain and level in the important work of making a profile of any road or stretch of country over which a surveying or reconnaissance party is passing.

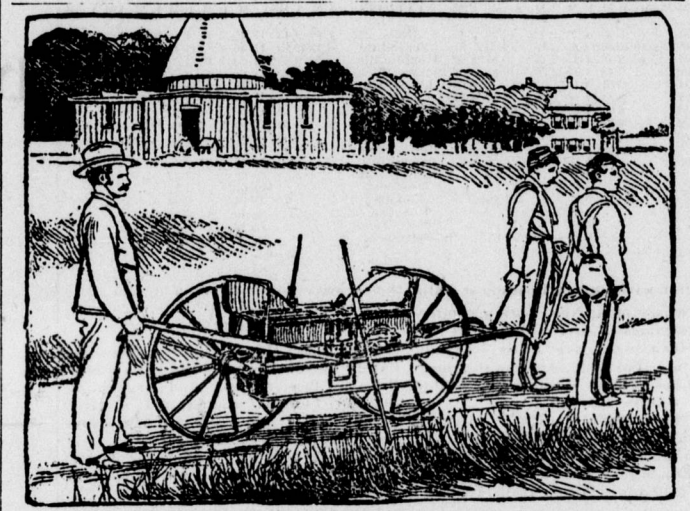
This machine is shown in the accompanying cut from the Scientific American. It consists of two substantial carriage wheels, one following the other in a single track, supporting between them, and on one side, a box of mechanism, and on the other a sort of cistern. This cistern is twenty-four inches in diameter and one-half inch deep. It is placed vertically and contains mercury. When in operation the "Orograph" must be held upright and not allowed to careen to either side.

As stated, the object of the machine is to draw upon paper an accurate profile of the ground over which it is rolled, thus furnishing the army engineers with all the results of a survey excepting the courses and general topography. The principles upon which the machine is constructed are those of the perambulator, operating in conjunction with a lever maintained continually in a horizontal position by floating upon a cistern of mercury. This lever is twenty-four inches in length and one-half of an inch thick, with floats attached to each end, and has free motion in a vertical plane on a horizontal axis.

Know Not Whence "Yankee" Came.

At the monthly meeting of the Maryland Historical Society, Dr. William

ner. There is in contemplation a system of branch schools, where instruction may be carried to the farmers of the State. One day will be devoted to lectures on specific topics and one day



THE OROGRAPH, AN AUTOMATIC SURVEYOR.

to practical work in the field, where applications of the principles given during the first day will be made.—New York Tribune.

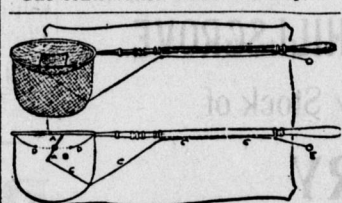
LIKE A CORN POPPER.

Automatic Collection Basket Is the Newest Thing For Church Use.

An automatic collection basket is one of the newest things for church use, and a trial was made of its merits upon a fashionable congregation at New York on a recent Sunday. According to the New York Evening Journal the device is reminiscent of a corn popper. In fact, it might well be called a "corn popper."

It has a long handle, hollowed, a wire box or pocket, with a trap-door arrangement, marked "AA," which opens when the collector pulls on the ring marked "E," which connects with the hollow of a handle, and sets again when he loosens the cord. "DD" shows the depth of the shallow tray at the top of the basket.

The contribution when taken up, according to the inventor of the popper, remains on the trap door until the collector has a chance to inspect it before it is dropped into the basket.



AUTOMATIC COLLECTION BASKET.

Willie's Thirst For Knowledge.

It was on a steam railroad going from Washington to Philadelphia that I overheard the following conversation between a little boy, just at the interesting age, anxious to know, and his aunt, whose patience was severely tested by little Willie's questions. The first to attract his attention was a buzzard flying high in the air.

"Oh, auntie," he exclaimed, "look at that chicken way up there."

"That's no chicken, Willie; that's a buzzard."

"But, auntie, I don't hear him buzz."

"Auntie, look at the man pumping the cow; is she punctured?"

"He is milking the cow, Willie. Do be still for a while."

After a short pause, he spied several pumpkins in a field and asked:

"Auntie, is a pumpkin a grown up orange?"

"Auntie, look at the moon. Where did all the stars come from?"

"I don't know, Willie. Don't ask so many questions."

"Did the moon lay 'em, auntie?"

And as darkness drew on little Willie began to nod and auntie gave a sigh of relief.—Philadelphia Inquirer.

The Austrian crown jewels contain a splendid emerald necklace and the largest single emerald in the world.

Hand Brown read an interesting article on "The Origin of 'Yankee Doodle.'" The doctor's manuscript consisted of two letters relative to the subject in question, which were written to him by Mr. Albert Matthews, the eminent archaeologist, of Boston.

The letters discussed all the theories which have been brought forward on the subject, treating it very fully in all the fifteen different solutions which are suggested, but failed to make any satisfactory answer to the question, which, as he said in the introduction, had never been solved. The great stumbling block on which the question generally brought up was the fact that the word "Yankee" had been applied primarily only to the New Englanders and did not originate in the South. Several of the solutions seemed plausible, as, for instance, the fact that the Algonquin Indians pronounced a word "Engree" which they applied to the English.—Baltimore American.

The "Boxer Organization."

The "Boxers" are the scum of the Chinese population. They have no uniform organization, nor any official leaders. Formerly they carried broadswords, but now they have well managed modern weapons, undoubtedly supplied by the Imperial family.

Before drilling they throw themselves into a frenzy, and then believe themselves invulnerable. The Empress Dowager has fostered an otherwise unimportant movement because of the wholesale desertions from her army under General Tung.

I learn also from this miracle that Christ does things in abundance. I think a small supply of wine would have made up for the deficiency. I think certainly they must have had enough for half the guests. One gallon of wine will do; certainly five gallons will be enough, certainly ten. But he goes on, and says, "I have forty gallons and forty gallons and fifty gallons and seventy gallons and 100 gallons and 130 gallons of the very best wine. It is just like Him—doing everything on the largest and most generous scale. Does Christ, our Creator, go forth to make leaves? He makes them by the whole forest full—nothked like the fern or silvered like the aspen or broad like the palm, thickets in the tropics, Oregon forests. Does He go forth to make flowers? He makes plenty of them. They flame from the hedge, they hang from the top of the grapevine in blossoms, they roll in the blue wave of the violets, they toss their white surf in the spiraea—enough for every child's hand a flower, enough to make for every brow a chaplet, enough with beauty to cover up the ghastliness of the grave. Does He go forth to create water? He pours it out not by the cupful, but by a river full, a lake full, an ocean full, pouring it out until all the earth has enough to drink and enough with which to wash!

Does Jesus provide redemption? It is not a little salvation for this one, a little for that and a little for the other, but enough for all. "Whoever will, let him come." Each man an ocean full for himself; promises for the young, promises for the old, promises for the lowly, promises for the blind, for the halt, for the outcast, for the abandoned; pardon for all, comfort for all, mercy for all, heaven for all—not merely a cupful of gospel supply, but 130 gallons. Aye, the tears of godly repentance are all gathered up into God's bottle, and some day, standing before the throne, we will lift our cup of delight and ask that it be filled with the wine of heaven, and Jesus, from that bottle of tears will begin to pour in the cup, and we will cry: "Stop, Jesus; we do not want to drink our own tears!" And Jesus will say, "Know ye not that the tears of earth are the wine of heaven?" Sorrow may endure for a night, but joy cometh in the morning.

I remark, further, Jesus does not shadow the joys of others with His own griefs. He might have sat down in that wedding and said: "I have so much trouble, so much poverty, so much persecution, and the cross is coming. I shall not

rejoice, and the gloom of My face and of My sorrows shall be cast over all this group." So said not Jesus. He said to Himself: "Here are two persons starting out in married life. Let it be a joyful occasion. I will hide My own griefs. I will kindly their joy." There are many not so wise as that. I know a household where there are many little children, where for two years the musical instrument has been kept shut because there has been trouble in the house. Alas for the little! Parents saying: "We will have no Christmas tree this coming holiday because there has been trouble in the house! Hush that laughing up stairs! How can there be any joy when there has been so much trouble?" And so they make everything consistently doleful and send their sons and daughters to ruin with the gloom they throw around them.

Oh, my dear friends, do you not know those children will have trouble enough of their own after awhile? Be glad they cannot appreciate all yours. Keep back the cup of bitterness from your daughter's lips. When your head is down in the grass of the tomb poverty may come to her, but not the luxury of dress. Christ is not impatient with the luxuries of life. It was not necessary that they should have that wine. Hundreds of people have been married without any wine. We do not read that any of the other provisions fell short. When Christ made the wine it was not a necessity, but a positive luxury. I do not believe that He wants us to eat hard bread and sleep on hard mattresses unless we like them the best. I think, if circumstances will allow, we have a right to the luxuries of dress, the luxuries of diet and the luxuries of residence. There is no more religion in an old coat than in a new one. We can serve God drawn by golden harness as certainly as when we go afoot. Jesus Christ will dwell with us under a fine ceiling as well as under a thatched roof.

What is the difference between a Chinese mud hovel and an American home? What is the difference between the rough bearskins of the Russian boor and the outfit of an American hunter? No difference except that which the gospel of Christ, directly or indirectly, has caused. When Christ shall have vanquished all the world, I suppose every house will be a mansion, and every garment a robe, and every horse an arch, and every cart every carriage a glittering vehicle, and every man a king, and every woman a queen, and the whole earth a paradise, with the glories of the natural world harmonizing with the glories of the material world until the very bells of the horses shall jingle the praises of the Lord.

I learn, further, from this miracle that Christ has no impatience with festal joy; otherwise He would not have accepted the invitation to that wedding. He certainly would not have done that which increased the hilarity. There may have been many in that room who were happy, but there was not one of them that did so much for the joy of the wedding party as Christ Himself. He was the chief of the banqueters. When the wine gave out, He supplied it, and so, I take it, He will deny us as the joys that are positively festal.

Who was it that sent the raven tapping on the window? The same God that sent the raven to feed Elijah by the brook Cherith. Christ in the hour of extremity! You murmured that He would not find the way out. You sat down and said: "God will not be merciful. He has cast me off." But in that the darkest hour of your history light broke from the throne and Jesus said: "Oh, wanderer, come home; I have seen you since you left me the hour of my extremity. I offer thee pardon and everlasting life!"

"Trouble came. You were almost torn to pieces by that trouble. You braced yourself up against it. You said, 'I will be a stoic and will not care.' But when the hour of my extremity I offer thee pardon and everlasting life!"

DR. TALMAGE'S SERMON.

SUNDAY'S DISCOURSE BY THE NOTED DIVINE.

Subject: The Miracle at Cana—Lesson of Changing the Water Into Wine—Christ Teaches That We Should Not Shadow Joys of Others With Our Own Griefs.

WASHINGTON, D. C.—A remarkable illustration of the ubiquity of English speaking people is furnished by the requests that have reached Dr. Talmage in Northern Europe for a sermon in out-of-the-way places, where he did not expect to find a single person who could understand him. There, as here, he presents religion as a festivity and invites all the world to come as guests and join in its holy merriment; text, John ii, 10. "Thou hast kept the good wine until now."

This chapter invites us to a marriage celebration. It is a wedding in common life, two plain people having pledged each other, hand and heart, and their friends having come in for congratulation. The joy is not the less because there is no pretension. In each other they find all they want. The daisy in the cup on the table may mean as much as a score of artistic garlands fresh from the hot-house. When a daughter goes off from home with nothing but a plain father's blessing and a plain mother's love, she is missed as much as though she were a princess. It seems hard, after the parents have sheltered her for eighteen years that in a few short months her affections should have been carried off by another, but her mother remembers how it was in her own case when she was young, and so she braces up until the wedding has passed and the banqueters are gone, and she has a cry all alone.

Well, we are to-day at the wedding in Cana of Galilee. Jesus and His mother have been invited. It is evident that there are more people there than were expected. Either some people have come who were not invited or more invitations have been sent out than it was supposed would be accepted. Of course there is not a sufficient supply of wine. You know that there is nothing more embarrassing to a housekeeper than a scant supply. Jesus sees the embarrassment, and He comes up immediately to relieve it. He sees standing six water pots. He orders the servants to fill them with water; then He waves His hand over the water, and immediately it is a wine real wine. Take of it and see for yourselves; no logwood in it, no strychnine in it, but first rate wine. I will not now be diverted to the question so often discussed in my own country whether it is right to drink wine. I am describing the scene as it was. When God makes wine He makes the very best wine, and 130 gallons of it standing around in these water pots—wine so good that the ruler of the feast tastes it and says: "Why, this is really better than anything we have had! Thou hast kept the good wine until now." Beautiful miracle! A prize was offered to the person who should write the best essay about the miracle in Cana. Long manuscripts were presented in the competition, but a poet won the prize by just this one line descriptive of the miracle: "The consecrated water saw its God and blushed."

We learn from the miracle that the first place that Christ has sympathy with housekeepers. You might have thought that Jesus would have said: "I cannot be bothered with this household deficiency of wine. It is not for Me, Lord of heaven and of earth, to become caterer to this feast. I have vaster things than this to attend to." Not so said Jesus. The wine gave out, and Jesus, by miraculous power, came to the rescue. Does there ever come a scant supply in your household? Have you to make a very close calculation? Is it to make for you a carriage on things decently and respectably? If so, do not get down and cry. Don't go out and fret, but go to Him who stood in the house in Cana of Galilee. Pray in the parlor! Pray in the kitchen! Let there be no room in all your house unconsecrated by the voice of prayer. If you have a microscope, put under it one drop of water and see the insects floating about, and when you see that God makes them and cares for them and feeds them come to the conclusion that He will take care of you and feed you.

A boy asked if he might sweep the snow from the steps of a house. The lady of the household said, "Yes, you sweep very poor." He says, "I am very poor." She says, "Don't you sometimes get discouraged and feel that God is going to let you starve?" The lad looked up in the woman's face and said, "Do you think God will let me starve when I have any snow to sweep?" "Yes, you sweep very poor." He says, "I am very poor." She says, "Don't you sometimes get discouraged and feel that God is going to let you starve?" The lad looked up in the woman's face and said, "Do you think God will let me starve when I have any snow to sweep?" "Yes, you sweep very poor."

I learn also from this miracle that Christ does things in abundance. I think a small supply of wine would have made up for the deficiency. I think certainly they must have had enough for half the guests. One gallon of wine will do; certainly five gallons will be enough, certainly ten. But he goes on, and says, "I have forty gallons and forty gallons and fifty gallons and seventy gallons and 100 gallons and 130 gallons of the very best wine. It is just like Him—doing everything on the largest and most generous scale. Does Christ, our Creator, go forth to make leaves? He makes them by the whole forest full—nothked like the fern or silvered like the aspen or broad like the palm, thickets in the tropics, Oregon forests. Does He go forth to make flowers? He makes plenty of them. They flame from the hedge, they hang from the top of the grapevine in blossoms, they roll in the blue wave of the violets, they toss their white surf in the spiraea—enough for every child's hand a flower, enough to make for every brow a chaplet, enough with beauty to cover up the ghastliness of the grave. Does He go forth to create water? He pours it out not by the cupful, but by a river full, a lake full, an ocean full, pouring it out until all the earth has enough to drink and enough with which to wash!

Does Jesus provide redemption? It is not a little salvation for this one, a little for that and a little for the other, but enough for all. "Whoever will, let him come." Each man an ocean full for himself; promises for the young, promises for the old, promises for the lowly, promises for the blind, for the halt, for the outcast, for the abandoned; pardon for all, comfort for all, mercy for all, heaven for all—not merely a cupful of gospel supply, but 130 gallons. Aye, the tears of godly repentance are all gathered up into God's bottle, and some day, standing before the throne, we will lift our cup of delight and ask that it be filled with the wine of heaven, and Jesus, from that bottle of tears will begin to pour in the cup, and we will cry: "Stop, Jesus; we do not want to drink our own tears!" And Jesus will say, "Know ye not that the tears of earth are the wine of heaven?" Sorrow may endure for a night, but joy cometh in the morning.

I remark, further, Jesus does not shadow the joys of others with His own griefs. He might have sat down in that wedding and said: "I have so much trouble, so much poverty, so much persecution, and the cross is coming. I shall not

rejoice, and the gloom of My face and of My sorrows shall be cast over all this group." So said not Jesus. He said to Himself: "Here are two persons starting out in married life. Let it be a joyful occasion. I will hide My own griefs. I will kindly their joy." There are many not so wise as that. I know a household where there are many little children, where for two years the musical instrument has been kept shut because there has been trouble in the house. Alas for the little! Parents saying: "We will have no Christmas tree this coming holiday because there has been trouble in the house! Hush that laughing up stairs! How can there be any joy when there has been so much trouble?" And so they make everything consistently doleful and send their sons and daughters to ruin with the gloom they throw around them.

Oh, my dear friends, do you not know those children will have trouble enough of their own after awhile? Be glad they cannot appreciate all yours. Keep back the cup of bitterness from your daughter's lips. When your head is down in the grass of the tomb poverty may come to her, but not the luxury of dress. Christ is not impatient with the luxuries of life. It was not necessary that they should have that wine. Hundreds of people have been married without any wine. We do not read that any of the other provisions fell short. When Christ made the wine it was not a necessity, but a positive luxury. I do not believe that He wants us to eat hard bread and sleep on hard mattresses unless we like them the best. I think, if circumstances will allow, we have a right to the luxuries of dress, the luxuries of diet and the luxuries of residence. There is no more religion in an old coat than in a new one. We can serve God drawn by golden harness as certainly as when we go afoot. Jesus Christ will dwell with us under a fine ceiling as well as under a thatched roof.

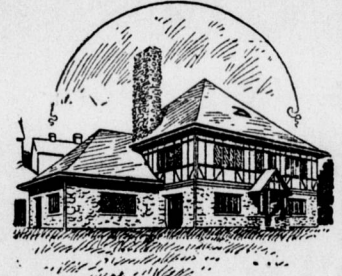
What is the difference between a Chinese mud hovel and an American home? What is the difference between the rough bearskins of the Russian boor and the outfit of an American hunter? No difference except that which the gospel of Christ, directly or indirectly, has caused. When Christ shall have vanquished all the world, I suppose every house will be a mansion, and every garment a robe, and every horse an arch, and every cart every carriage a glittering vehicle, and every man a king, and every woman a queen, and the whole earth a paradise, with the glories of the natural world harmonizing with the glories of the material world until the very bells of the horses shall jingle the praises of the Lord.

I learn, further, from this miracle that Christ has no impatience with festal joy; otherwise He would not have accepted the invitation to that wedding. He certainly would not have done that which increased the hilarity. There may have been many in that room who were happy, but there was not one of them that did so much for the joy of the wedding party as Christ Himself. He was the chief of the banqueters. When the wine gave out, He supplied it, and so, I take it, He will deny us as the joys that are positively festal.

A School of Farming

It Will Aim to Raise the Standard of Agricultural Methods.

WHEN the promoters of the School of Practical Agriculture and Horticulture looked about for a spot wherein to establish the institution various places were suggested, but it was finally agreed that Briarcliff Manor, one of the most beautiful parts of Westchester County, N. Y., would be



THE MODEL DAIRY.

the most suitable. It will be on a plateau overlooking the sixty-six acres which have been acquired, and also much of the land and many of the buildings on the Briarcliff Farms, which will serve not only as a beautiful picture, but as an inspiration for the students.

The object of the school is "to train men and women in the methods of horticulture, floriculture, gardening, poultry raising and allied branches, that they may become proficient in the manhood from the main line to the farm, and by means of these the shipment of farm products is facilitated. Near the railroad are the neat homes of some of the farm hands, and a short distance beyond these, toward the ridge, are several large barnyards; further away, on the main road, is the model dairy building. Of the 875 head of cattle on the place, about 400 are registered Jerseys. No other breed is allowed in the herd.

There are several milking stations, and from these the milk is taken to the dairy as soon as the cans are filled. All known safeguards against impurity are employed, and no milk is allowed to milk a cow until he has thoroughly agement of farms, estates, greenhouses and gardens, and may be able by thorough knowledge of the science of the soil to make the field, through intelligent and skillful work, bring forth abundantly of its great wealth of beauty and usefulness."

The school will aim to raise the standard of agricultural methods. Practical instruction will be given in the orchard, garden, greenhouse, poultry yard and dairy, and students will be taught "how to overcome and not be overcome by the many difficulties beauty and usefulness."

Briarcliff Farms occupy a tract extending about four miles north and



THE BUTTER ROOM.

south and about three miles east and west. The railroad tracks have been washed his hands, and this must be done again before he begins with the second cow. The attendants wear

"We already have trees growing and small fruits for the use of students. Landscape gardening is a feature, as it may be applied to the beautifying of country homes in an inexpensive man-