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Meneely Bells



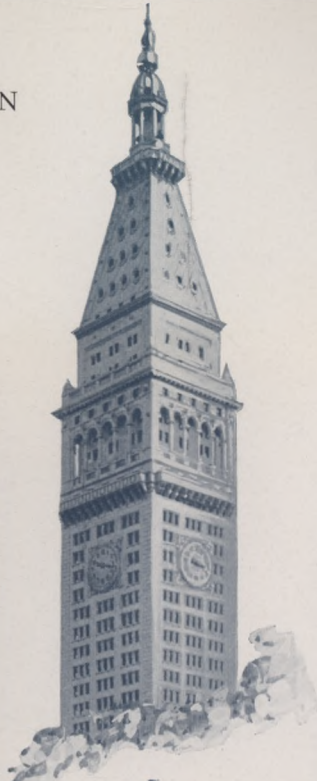
Meneely Bell Co.
Troy, N.Y.
New York Office - 220 Broadway

MENEELY BELLS

Right
METROPOLITAN
TOWER
NEW YORK
*Bells 650 feet
above ground*



Below
CONSOLIDATED
GAS BUILDING
NEW YORK
*Bells 400 feet
above ground*



Above
ROANOKE
BUILDING
CHICAGO
*Bells 450 feet
above ground*



Left
STRAUS
BUILDING
CHICAGO
*Bells 425 feet
above ground*

The Four Highest Sets of Bells in the World
Were made by MENEELY BELL CO., Troy, N. Y.

MENEELY BELL CO.

*Designers and Founders of Church, Chime
Academy, Tower-Clock, Court-
House, Fire-Alarm, Factory
and other Bells. Mounted
in the Most Approved
Manner and Fully
Warranted*

*

PRINCIPAL OFFICE AND FOUNDRY

22-28 RIVER STREET

TROY, N. Y.



BAKER MEMORIAL LIBRARY
DARTMOUTH COLLEGE, HANOVER, N. H.
CONTAINING OUR HEAVY CHIME OF SIXTEEN BELLS

FOREWORD

THIS catalogue is presented to the attention of those considering the purchase of bells, in the belief that it will amply provide the necessary preliminary information. The ordinary questions of inquiry in respect to the weights and tones of bells, their mountings, means of transportation, or manner of hoisting into tower find answers herein under their appropriate headings. The price at which bells are offered is the only item which cannot be published inasmuch as the metals of which they are composed possess a fluctuating value to which that of bells must, in a measure, correspond. We are always prepared, however, to name the lowest price at which bells of genuine bell-metal composition can be furnished but can never agree, under any circumstances, to manufacture bells of inferior grade at lower than our standard prices, fully realizing that bells which are in any way deficient are properly considered out of place in the present day.

A written guarantee as to excellence of tone and composition, as well as to durability of casting, accompanies each bell of our manufacture. Each is subjected to a thorough ringing test before shipment. Every bell furnished by us possesses all of the quality, volume and prolongation of tone which the given weight of metal is capable of producing and our guarantee is furnished with each bell that no metal has entered into its composition other than the best pure copper and tin—the only metals which, as the experience of ages and many authoritative tests have demonstrated, are capable of producing a good ringing alloy.

The facilities of manufacture which we possess would, alone, guarantee success in our work. Our foundry buildings are thoroughly complete in every part. All of the patterns, both of bells and mountings, are designed by the closest calculation and, together with melting furnaces, flasks, and other

apparatus, are of that character which study and experience have shown to be most nearly perfect. The forms and proportions of the bells are insured by a due regard to the laws of acoustics and other natural guides, aided by close musical study, which render unerringly correct the production of any desired tone or quality of sound.

To the proper mounting of bells, which subject is fully treated elsewhere, we have given a consideration quite in proportion to that of their successful manufacture and can safely claim that our "Rotary Mountings" are the most efficient of any now in use. The adaptability of each part of the mountings to the bell is plainly recognized, especial attention having been given to the firm hold of the yoke on the bell; to the simple arrangement by which the yoke permits the bell to be turned upon its vertical axis, so as to cause the clapper to strike in a new place; to the ease with which the bell is permitted to swing; and to the use of material in those forms which, it is well-known, yield greatest strength.

Making bells of all kinds a specialty, to which our undivided attention is given, and having the oldest and most experienced workmen in this line of manufacture, together with the choicest clientele, we do not hesitate to claim that we can satisfactorily fulfill any demand in the line of excellent work. The unqualified success which our bells have attained in every section of our own country, South America, Europe, Asia and Africa, and the farthest islands of the sea, justifies us in this assertion.

Our bells are everywhere in the newest and finest public buildings and our trade is distinctively of the best.

Especially do we invite those who are in any way interested in these matters to a personal inspection of our establishment, its facilities for manufacturing and its stock on hand.

Communication by letter is solicited.

MENEELY BELL Co.,
22-28 River Street,
Troy, N. Y.

CHURCH BELLS



CHURCH BELLS, fully warranted as to excellence of tone, purity of composition, and strength of casting; mounted in the most approved manner; of weight, dimension, and tone, noted in the accompanying table. The mountings consist of our "Conical Rotary Yoke," described on page 20, so arranged as to firmly sustain the bell and essentially lessen the labor of ringing; together with Wheel, Frame, Standards, and Tolling Hammer, of best material and form of construction. Steel Clapper Springs are also furnished as shown on page 20. The bell has its bearings upon trunnions running through the yoke-arms and body, thus effectually preventing the shaking of the frame, or jarring of

the tower, by loose action. Mountings of special design for bells of any weight furnished to order. Steel Spring Stops accompany large bells to prevent their being completely overturned when swung.

BELL			MOUNTINGS	
Weight	Medium Tone	Diameter	Size of Frame—Outside	Diameter of Wheel
400 lbs.	D	27 in.	3 ft. 6 in. by 3 ft. 8 in.	4 ft. 4 in.
450 lbs.	C#	28 in.	3 ft. 6 in. by 3 ft. 8 in.	4 ft. 4 in.
500 lbs.	C	29 in.	3 ft. 6 in. by 3 ft. 8 in.	4 ft. 4 in.
550 lbs.	C	30 in.	3 ft. 6 in. by 3 ft. 8 in.	4 ft. 4 in.
600 lbs.	B	31 in.	3 ft. 9 in. by 4 ft.	4 ft. 9 in.
700 lbs.	B	33 in.	3 ft. 11 in. by 4 ft. 2 in.	4 ft. 9 in.
800 lbs.	B _b	34 in.	3 ft. 11 in. by 4 ft. 2 in.	5 ft. 6 in.
900 lbs.	A	36 in.	4 ft. 2 in. by 4 ft. 6 in.	5 ft. 9 in.
1000 lbs.	A	37 in.	4 ft. 2 in. by 4 ft. 6 in.	5 ft. 9 in.
1200 lbs.	A _b	39 in.	4 ft. 9 in. by 4 ft. 10 in.	6 ft. 3 in.
1500 lbs.	G	42 in.	4 ft. 10 in. by 4 ft. 10 in.	6 ft. 6 in.
1800 lbs.	F#	45 in.	5 ft. 5 in. by 5 ft. 7 in.	7 ft.
2000 lbs.	F	46 in.	5 ft. 5 in. by 5 ft. 7 in.	7 ft.
2300 lbs.	E	49 in.	5 ft. 6 in. by 5 ft. 9 in.	7 ft. 6 in.
2500 lbs.	E	50 in.	5 ft. 6 in. by 5 ft. 9 in.	7 ft. 6 in.
3000 lbs.	E _b	53 in.	6 ft. 3 in. by 5 ft. 10 in.	8 ft.
3500 lbs.	D	56 in.	6 ft. 3 in. by 6 ft. 10 in.	8 ft. 6 in.
4000 lbs.	C#	58 in.	6 ft. 9 in. by 6 ft. 8 in.	8 ft. 6 in.
4500 lbs.	C	61 in.	6 ft. 9 in. by 6 ft. 8 in.	9 ft.
5000 lbs.	C	63 in.	7 ft. 1 in. by 7 ft. 2 in.	9 ft.
5500 lbs.	B	65 in.	7 ft. 1 in. by 7 ft. 2 in.	9 ft.
6000 lbs.	B _b	67 in.	7 ft. 5 in. by 7 ft. 6 in.	9 ft.
6500 lbs.	B _b	68 in.	7 ft. 5 in. by 7 ft. 6 in.	9 ft. 6 in.
7000 lbs.	B _b	69 in.	7 ft. 5 in. by 7 ft. 6 in.	9 ft. 6 in.

The approximate dimensions of a fully mounted Church Bell are the two outside frame dimensions and the wheel diameter.

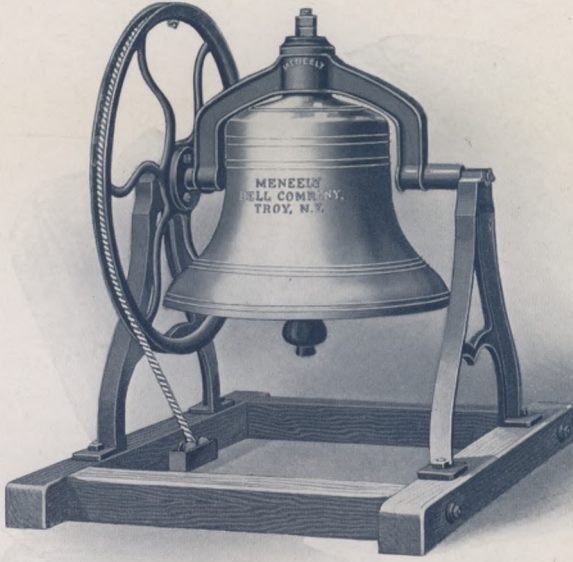
The actual weights usually exceed the specified patterns about three per cent.

The medium in the range of tones which the given weight of metal is capable of producing is that referred to. This range of tone is necessarily very limited.

ELECTRIC TOLLING HAMMERS are described on page 10.

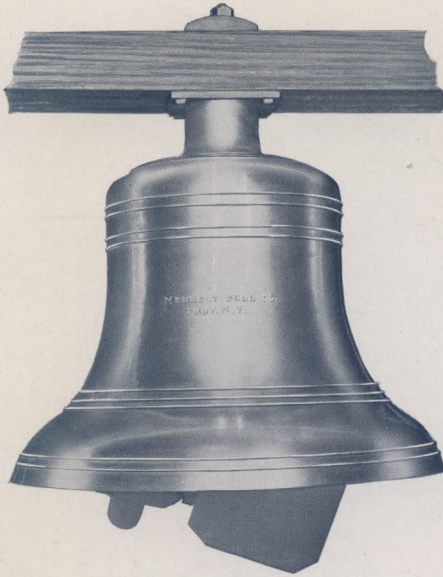
COTE TOWER BELLS are shown on page 12.

SCHOOL AND SMALL CHAPEL BELLS



THESE weigh from 100 lbs. to 350 lbs., as may be seen in the accompanying table; with complete mountings, including "Rotary Yoke," so arranged as to permit the ready turning of the bell; Wheel of Iron; substantial Frame, and Iron Standards. Steel Clapper Springs are also furnished. Factories and other industrial establishments are frequently supplied with bells of this class.

BELL			MOUNTINGS	
Weight	Medium Tone	Diameter	Size of Frame—Outside	Total Height
100 lbs.	C	17 in.	2 ft. 4 in. by 2 ft. 8 in.	2 ft. 10 in.
125 lbs.	B ₉	18½ in.	2 ft. 4 in. by 2 ft. 8 in.	3 ft.
150 lbs.	A	19½ in.	2 ft. 4 in. by 2 ft. 8 in.	3 ft.
175 lbs.	A ₇	20½ in.	2 ft. 8 in. by 3 ft. 1 in.	3 ft.
200 lbs.	G	21½ in.	2 ft. 8 in. by 3 ft. 1 in.	3 ft. 3 in.
225 lbs.	G ₆	22 in.	2 ft. 8 in. by 3 ft. 1 in.	3 ft. 5 in.
250 lbs.	F	23 in.	2 ft. 11 in. by 3 ft. 3 in.	3 ft. 6 in.
300 lbs.	E	24½ in.	2 ft. 11 in. by 3 ft. 3 in.	3 ft. 6 in.
350 lbs.	E ₅	26 in.	2 ft. 11 in. by 3 ft. 3 in.	3 ft. 8 in.

TOLLING, ANGELUS AND HOUR
STRIKING BELLS

MOUNTED with striker in the simplified manner shown herewith, the bell is in complete ringing order. This method of ringing a stationary bell is one of our most revolutionary developments in the field of electrical operation. It eliminates not only the necessity of providing a separate tower support for an outside striking hammer and its mechanism, but also the noise and vibration set up by these extra parts.

Operation of the striker, which is more fully described on page 14, is entirely electrical. Manual ringing is done from one or more conveniently located push-buttons. Automatic striking may be obtained from small, clock-controlled selectors, which can be furnished to strike the hours, the Angelus or combinations of the two. Equipped with night silencers, such selectors are fully automatic in their operation.

ELECTRIC TOLLING HAMMERS are also provided for fully mounted Church Bells, striking on the outside. The operation is the same as with stationary bells and does not interfere, in any way, with their swinging.

TOWER CLOCK BELLS, before electric striking was developed, necessitated a clock mechanism of sufficient size to operate a bell of the desired weight. Now it is possible to ring any bell, regardless of size, from any tower clock by the simple use of an electrical contact in place of the mechanical striking mechanism, and frequently a considerable saving can thus be made.

FIRE ALARM BELLS are considered the most satisfactory type of alarm in many communities. Such a bell as that shown above can be easily made a part of any automatic alarm system.

M E N E E L Y B E L L S

SHIP AND YACHT BELLS



FROM 10 LBS. IN WEIGHT, UPWARDS, FURNISHED WITH STATIONARY BRACKET OR YOKES TO PERMIT THE BELL TO SWING. BELLS OF THIS CLASS ARE HIGHLY POLISHED AND CAN BE INSCRIBED IF DESIRED.

FOG-ALARM AND LIGHT-HOUSE BELLS

SUPPLIED, of any weight, provided with mountings especially adapted.

COTE TOWER BELLS



SWINGING bells are frequently placed in Cote Towers and are equipped with Yoke, Wheel or Lever, Metal Journal Bearings for the walls, and Metal Sheaves which lead the rope into the building through a pipe conduit.

Any of these bells can be mounted in a stationary manner, as shown on page 10, to be rung electrically or by means of a rope attached to the clapper. The height of such a bell, with its clapper installed, is roughly twelve-tenths of its diameter. The table on the next page gives complete specifications for computing installations in this type of tower.

BELL			MOUNTINGS	
<i>Weight</i>	<i>Medium Tone</i>	<i>Diameter</i>	<i>Diameter of Wheel</i>	<i>Width Between Bearings</i>
100 lbs.	C	18 in.	1 ft. 7 in.	1 ft. 10 in.
125 lbs.	B _b	19 in.	1 ft. 11 in.	1 ft. 10 in.
150 lbs.	A	20 in.	1 ft. 11 in.	1 ft. 10 in.
175 lbs.	A _b	21 in.	1 ft. 11 in.	2 ft. 1 in.
200 lbs.	G	22 in.	1 ft. 11 in.	2 ft. 1 in.
225 lbs.	G _b	22 in.	2 ft. 3 in.	2 ft. 1 in.
250 lbs.	F	23 in.	2 ft. 3 in.	2 ft. 5 in.
300 lbs.	E	25 in.	2 ft. 3 in.	2 ft. 5 in.
350 lbs.	E _b	26 in.	2 ft. 8 in.	2 ft. 5 in.
400 lbs.	D	27 in.	4 ft. 4 in.	2 ft. 9 in.
450 lbs.	D _b	28 in.	4 ft. 4 in.	2 ft. 9 in.
500 lbs.	D _b	29 in.	4 ft. 4 in.	2 ft. 9 in.
550 lbs.	C	30 in.	4 ft. 4 in.	2 ft. 9 in.
600 lbs.	C	31 in.	4 ft. 9 in.	3 ft. 0 in.
700 lbs.	B	33 in.	4 ft. 9 in.	3 ft. 2 in.
800 lbs.	B _b	34 in.	5 ft. 6 in.	3 ft. 2 in.
900 lbs.	A	36 in.	5 ft. 9 in.	3 ft. 4 in.
1000 lbs.	A	37 in.	5 ft. 9 in.	3 ft. 4 in.

In figuring the cote opening width, allowance must be made for the two bearings.

The wheel is set away from the wall by the wall bearing and a part of the yoke arm. It can, therefore, be safely figured to extend somewhat above the spring of the arch when necessary.

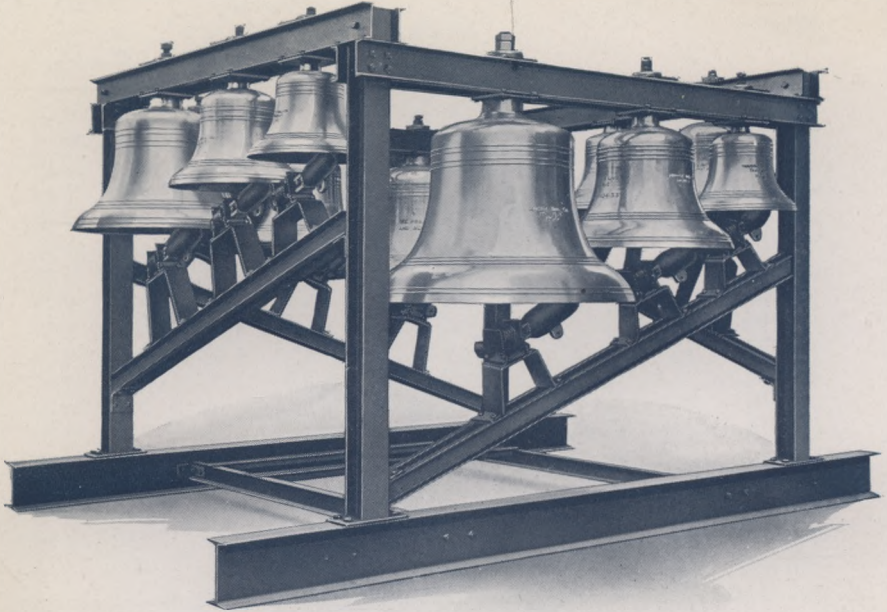
COURT-HOUSE BELLS

WEIGHT, dimensions, tone, etc., noted in table on page 8, mounted in the full manner of church bells, as shown in cut on page 7, and complete in every respect.

PLANTATION, FARM, HOME, AND CAMP BELLS

THESE weigh from 10 lbs. to 80 lbs., mounted with Yoke and Lever, and provided with iron bearings for the trunnions.

CHIMES



A CHIME consists of eight or more bells, there being no limit to the number that can be used. Any desired combination of tones can be produced. A popular chime contains ten bells and has the full octave with one note above as well as the flat seventh tone so that music can be rendered in several keys. Occasionally the sharp fourth tone is also added. The finest chimes are manufactured in our foundry and we can furnish them of any weight and number of bells, with or without mountings and adapted to any position.

The illustration above shows our method of mounting chimes. All of the bells are stationary and are suspended from a frame of steel. They are shown equipped to be rung electrically using clappers of special composition.

THE MENEELY ELECTRIC BELL RINGING ACTION

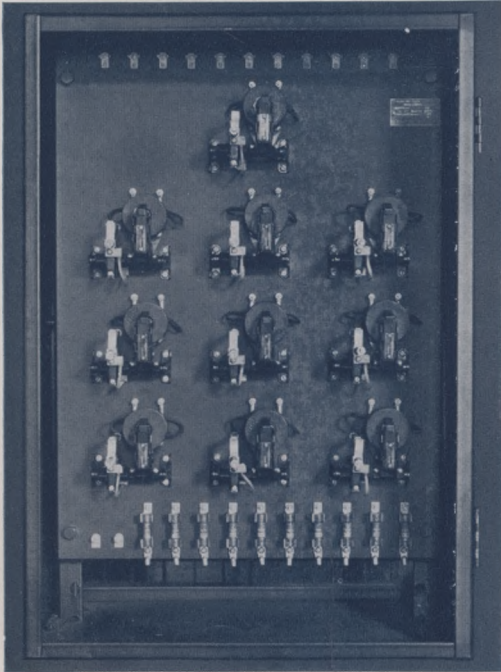
An Electric Bell Ringing Action has been developed by us, in collaboration with the laboratories of the well-known

General Electric Company. This action does the work admirably and we are now offering it to those users of bells who find it difficult or expensive to have the bells operated by hand.

Powerful strikers of special design are employed, their adjustments being such that rapid repeat blows on the same bell can be secured. This will be appreciated by musicians who have played chimes equipped with weak strikers that require long pulls on the clappers of the bells to secure volume of sound—the time thus taken by the clappers falling back into normal position for succeeding blows being too great to permit of rapidly successive blows on the same bell.

The impulse to operate each bell is obtained through a correctly designed contactor or relay which is in turn operated by pressing the proper console key. The action is instantaneous. These relays are mounted in a lock fitted panel case and generally located in the tower beneath the bell deck. Current consumption is negligible.

The equipment is guaranteed against defect and as to satisfactory operation. It is remarkably free from repair and service requirements. All adjustments are permanently made



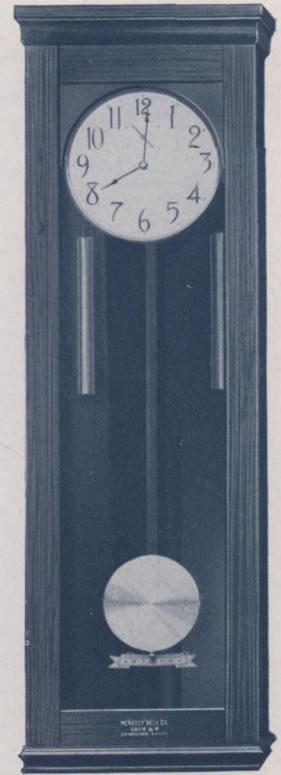
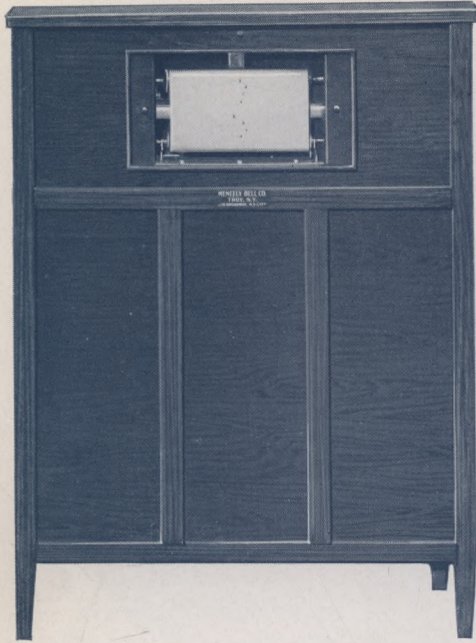
RELAY PANEL



ELECTRIC CONSOLE

at the time of installation, and the exposed strikers are mounted in weather-proof and sound-proofed boxes.

Chimes and Westminster Peals are operated from a small keyboard, usually placed near the organ console. If desired, additional keyboards may be installed in the rectory or elsewhere.



We also furnish an electrical machine which operates the chimes automatically. Perforated rolls, cut for any desired tunes, control the mechanism in a manner similar to that of the player piano. The rolls rewind automatically and can be changed whenever desired, thus obviating any possibility of monotony.

A clock can be supplied which will give the impulse to start the player machine at any desired intervals. In this manner the use of the bells can be had throughout the day without the aid of human agency.

In addition to the above described method, one or more of the bells in a Chime can be operated by the automatic selectors described on pages 10 and 19.

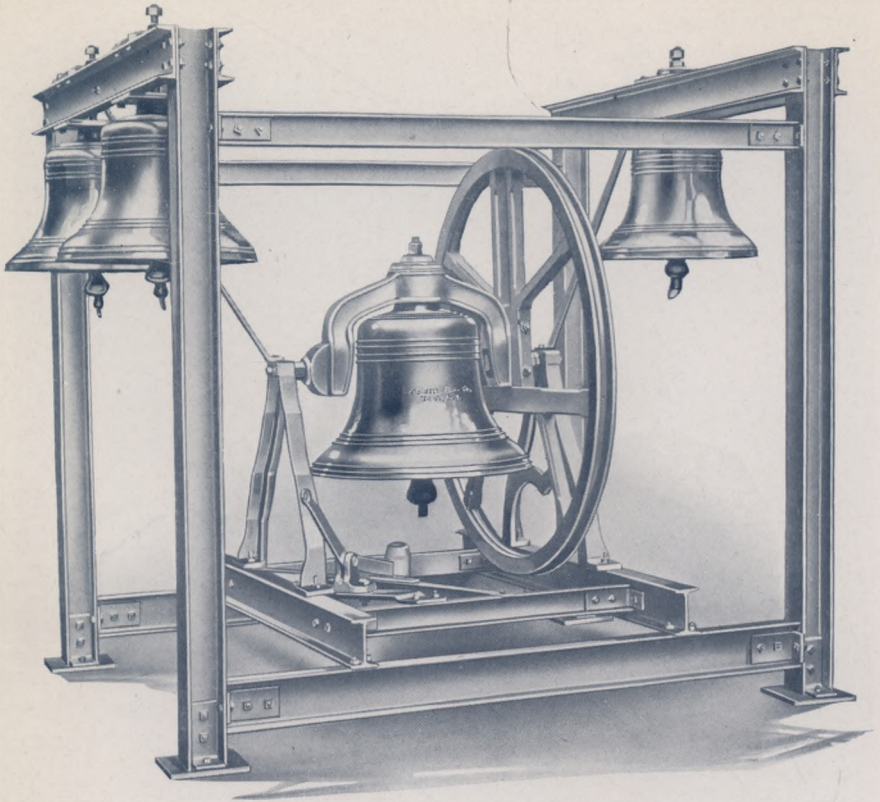


HAND RINGING CONSOLE

Chimes can also be rung by the hand system consisting of chains and rods leading from the clappers to the levers of the ringing case shown by the accompanying cut. Due to our perfected system of balances, counterpoises and other adjustments, which are in the belfry, bells connected in this manner are remarkably easy to play.

The Meneely Bell Company's chime ringing actions have always been highly regarded by chime users. These actions are now in use in many important towers, including those of Trinity Church and St. Patrick's Cathedral, New York City; Cadet Chapel, West Point; and the Harkness Memorial at Yale University. Various chimes of foreign manufacture have been re-equipped with the Meneely Bell Company's ringing actions.

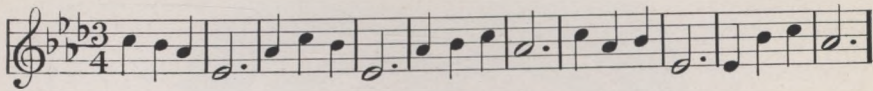
PEALS



A SWINGING peal, in this country, is generally said to consist of three bells, attuned to the first, third and fifth tones of the musical scale, or where four bells are used, the eighth musical tone is added. These bells are usually furnished with full mountings, and are swung in the manner of church bells.

The Westminster Peal is very popular in this country.

This arrangement was introduced over a century ago in St. Mary's, Cambridge, England, from an air which is said to have been written by Handel.



Not until many years later was it copied for the tower of the House of Parliament, Westminster.

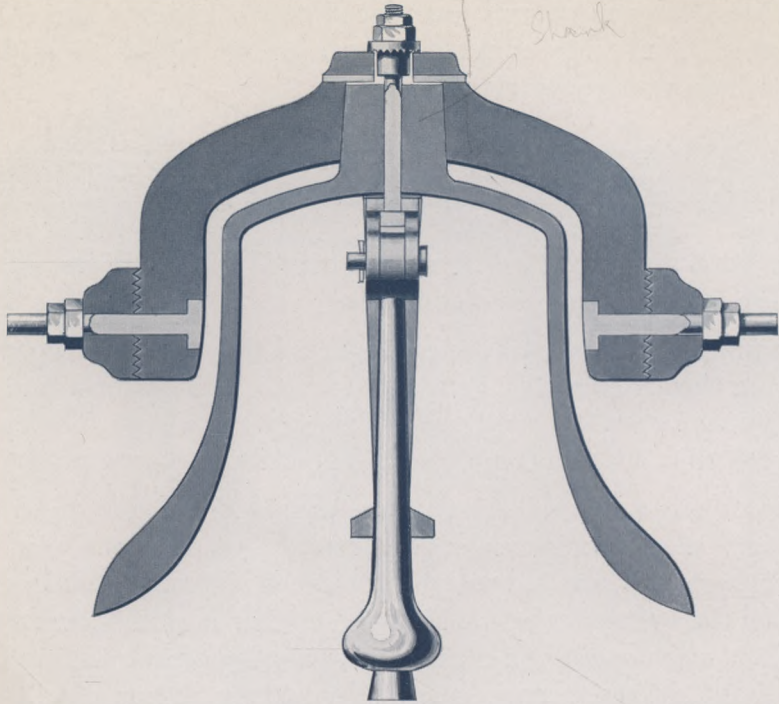
A simple way of musically describing this combination is by saying that it consists of the first, fourth, fifth and sixth notes of the major scale, the "fourth" being the key-note. The range is such that numerous changes, but no tunes, can be produced.

The bells are sometimes operated manually, but more frequently electrically. With the latter type of operation, the purchaser can use a specially designed program selector to strike the quarters and hours. This selector is clock-controlled, and in many cases the Angelus is substituted for the regular program at the proper hours. Frequently tower clocks are equipped to ring these changes on the bells. All such equipment is self-silencing at night.

The illustration shows a common method of mounting a Westminster Peal for church use. The largest bell has the complete swinging mountings, so that it can be used for separate ringing, but often all of the bells are made stationary.

Many prominent churches and public buildings are provided with Westminster Peals of bells; one of the largest swinging sets in existence being in St. Agnes' Chapel, Trinity Parish, New York, which was made in this foundry in 1892. Other installations are shown in the illustrations on other pages of this catalogue.

ROTARY YOKE



THIS yoke is unhesitatingly pronounced to be not only of beautiful design, but the most efficient of any now in use, and exceedingly simple in its construction and operation. No pains or expense have been spared in its design, nor in the completion of its patterns. The advantage of this yoke consists in the firm hold which it secures upon the bell, in the ease with which it permits the bell to be turned around while still mounted, so as to cause the clapper to strike in a new place, and in the ready change which it allows in the adjustment of its poise to the convenience of the ringer.

The construction and operation of this yoke are shown, to some extent, in the accompanying cut, in connection with that on page 7. As will be noticed, a round, tapering shank is cast upon the top of the bell, and upon this the yoke, fitted to

correspond, has a firm bearing. The bell is supported by a large bolt running through the center of the shank. The bolt has its bearing, above, on a circular plate fitted to and covering the crown and aperture of the yoke. The clapper and spring are constantly kept in proper position by means of the bolt, which is made square below the screw, and is fitted with a washer, toothed around on its lower side and bearing upon the top of the circular plate, out of which rise several teeth, corresponding to those of the washer.

In order to rotate the bell it is simply necessary to unscrew the bolt, so that the bell is loosened a little in the yoke, when it can be readily turned to any desired extent, the plate and bolt moving with it, by taking hold of the rim. The bell is again placed in condition for ringing by turning the spring, which carries with it the clapper bolt, so that it stands at a right angle with the axis of the yoke, after which the nut of the bolt is screwed down.

A bell is made to swing with more or less ease by changing the position of the notched arms through which the trunnions pass, but as we arrange every bell to swing properly, when tested at the foundry prior to shipment, it is better not to disturb the position of these arms. A little practice almost invariably overcomes the natural difficulty attending the ringing of a new bell.

CLAPPER SPRINGS

BELLS of 100 lbs. weight and upward have springs attached to them, as shown in cut on page 20, to prevent the clapper from resting on the bell after the blow has been given. An exceedingly disagreeable jarring sound is thus avoided, and the bell is enabled to give out its note full and clear. The noise, which the action of the clapper upon the bare spring would produce, is obviated by the use of leathers riveted upon the end of its arms, the renewal of which is necessary as they become worn. In case either arm of the spring at any time bends so near to the bell as to prevent the rebound of the clapper, it can be forced a little further out by inserting a bar between it and the side of the bell.

TOLLING HAMMER

A TOLLING hammer is attached to the frame of all bells of 400 lbs. weight and upward (see cut on page 7), by means of which the bell can be tolled promptly and clearly. This hammer is so arranged, in its connection with the frame, that its length of arm can be altered to meet any change in the position of the yoke-arms, with its consequent raising or lowering of the bell, it being essential to the safety of the bell, as well as to the quality of tone produced, that the blow of the hammer should fall in the proper place. Care must be taken that the tolling hammer is not allowed to get in the way of the bell while swinging, as it might thus be broken or force the bell out of the standards.

STOP

AN INVENTION of ours is a Stop or Clutch attached to the top of the wheel of all bells of heavy weight, with a sliding buffing-piece on the inside of the frame beneath, which latter works against a steel spring. By the action of these parts, one on the other, the bell is prevented from being thrown over when rung with its mouth fully up, and violent jarring or straining of the tower and mountings is avoided.

WARRANTY

THE following is the form of Warranty attached to the bill of sale of all our bells of 100 lbs. and over:

“The above mentioned bell is warranted to be of good composition, and of perfect tone, the purchaser to decide in this matter, and is also warranted not to break, while being used in the proper manner, for the term of fifteen (15) years from this date. In case of failure in any of these respects, and immediate notification of the fact is furnished us, our agreement is to recast the bell, or provide another, free of charge, which shall be satisfactory, the purchaser to bear expense of transportation.”

INSCRIPTION

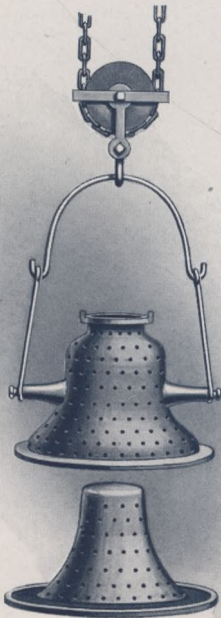
INSCRIPTIONS, of any desired character, are cast without extra charge upon bells made to order.

OLD BELLS

Old bells, made of pure bell metal, are received by us in *direct exchange* for new ones. We do not, however, purchase outright any old bells or mixed metals at any price, nor deviate, in any respect, from our fixed rule of bell composition, which is the very best.

MOULDING CASES

ALL of our bells are moulded in perforated iron cases, by the use of which we are enabled to secure castings thoroughly sound and excellent in finish, and therefore capable of producing clearness of tone. The accompanying cut shows the form of these cases.



Porous loam and other substances compose the material which is put upon the cases in varying thickness, to which the necessary form and finish are given by the use of sweep patterns, shaped in such a manner as to secure, by their revolution about a common center, surfaces corresponding to the outer and inner portions of the intended bell. As bell metal shrinks in cooling, the inner case, before the loam is placed upon it, is wrapped about with straw rope, the charring of which, by the heat of the metal in pouring, gives room for the necessary contraction, and prevents the straining of the metal. The moulds are closed upon each other in a manner securing exact regularity of thickness in the space within. The metal is poured in at the head. The gases generated in the metal, and which, if allowed to remain in the moulds, would produce an explosion, or at least, cause a porous casting,

find vent in the perforations. These cases, also, to the advantage of the bell, allow it to cool, after casting, in such a manner as to secure precise uniformity throughout.



THE illustration above shows the act of "pouring" a bell. The metal has been melted and mixed into the alloy in a furnace. It is then transferred to the ladle, shown, and carried by a crane to the prepared mould. The man on the right regulates the flow by command to those at the crane, and by tilting the ladle. The one on the left is steadying it. A third man holds his "skimmer" ready to catch any small pieces of slag which might break loose and enter the casting. After the pour, the mould, with the bell now "setting," is buried in earth to retard its cooling. This operation requires the utmost skill and precision and can only be done by highly trained craftsmen. The two pictured above are father and son whose combined experience in bell founding is 65 years.

TRANSPORTATION

HAVING our works centrally located in the City of Troy, we have at our hand not only three great railway systems, but also tidewater and inland navigation facilities.

In view of the various routes open to us it is desirable that customers, in ordering bells, should designate the manner of shipment. In the absence of definite instructions we always forward bells in the manner which we deem to be for the best interest of the purchaser.

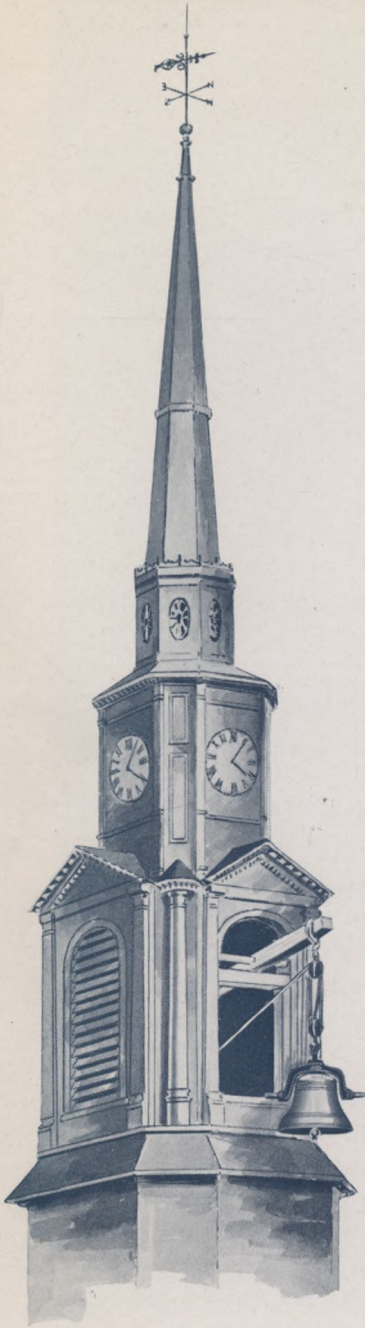
Special pains are taken in the preparation of all bells and mountings for safe transportation.

MOUNTING AND RINGING BELLS

THE bell-chamber should not be placed any higher in the tower than is necessary in order to bring the position of the bell, when mounted, just above the level of the tops of the surrounding houses. This room should be especially arranged to permit the free egress of the sound. It should be tightly ceiled directly above the tops of the windows, which should be as wide and open as possible, and should extend almost to the floor, in order that the bell, when at rest may have its mouth above the level of their base. The floor beneath the bell should be tightly closed.

It is usual to construct the tower in such a manner that the bell can be readily hoisted to its position through openings on the inside. Since, however, it is frequently necessary to raise the bell on the outside, we have furnished the accompanying cut, together with the following instructions, showing an easy way of getting the bell into its place.

First, a strong beam is projected at an elevated angle, from the top of a window in the bell-chamber, and securely fastened. The tackel is attached to the end of this beam and the power is applied either from within the tower, or by running the rope to the ground and through a stationary pulley, where it may be drawn upon by any number of men, an auto truck, or a mechanical hoisting apparatus. When the bell has been raised

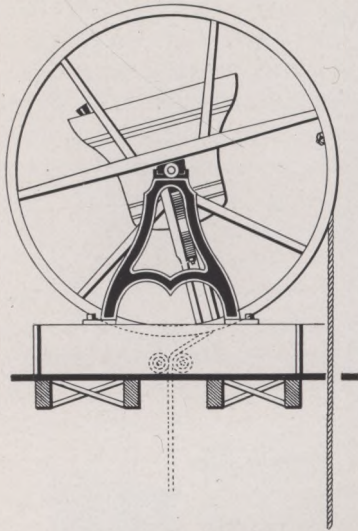


to a sufficient height, it can be drawn into the tower by the guide rope or by a small tackle. Prior to the hoisting of the bell, the frame should be raised and placed so that it has a firm and level bearing. If necessary, the standards may be removed from the frame and the frame taken to pieces. The wheel should also be raised before the bell and placed upon the proper side of the tower, ready for attachment. It will be noticed that the wheel must necessarily be placed upon the side of the frame opposite to that upon which the tolling hammer is to be attached. When the bell is mounted the standards should have small, wooden braces set up against them, sidewise and bearing against the wall of the tower at the intersection of the floor, so as to prevent any fracture or straining in that direction. The clapper bolt should be well oiled when inserted, and the key opened at the end, to prevent its falling out.

The rope is attached in the manner shown in the cut on page 27. Whenever the weight of the bell permits, it is usual to let the rope pass down through sheaves directly under the center of the wheel, by which arrangement the bell can be

swung completely over, without disarranging the rope. In the case of bells of heavy weight, since any additional friction would materially increase the labor of ringing, it is usual to let the rope fall in a direct line from the outer portion of the wheel and pass through the floor without the use of sheaves. To guard against the throwing over of the bell, and the consequent disarrangement of the rope, a *stop*, as described on page 22, is attached to the outside of the wheel, at its top, and another to the inside of the frame, upon the bottom, which acting upon one another arrest the motion of the bell. Our excellent steel spring attachment bearing against the end of the frame-stop prevents any injury to the mountings, or jar of tower, by severe ringing.

The bell and its mountings should be examined, from time to time, to see if the various nuts are properly screwed up and the other parts are in order, and oil should be placed upon the trunion-bearings and clapper bolt as often as required, but not in sufficient quantity to permit its dripping upon the bell, to the consequent injury of the tone.



The size of the bell-rope is an important consideration, since one of much larger size than necessary is generally selected, in order to suit the grasp of the ringer's hand, and this, by its weight and stiffness, is apt to impede the free swinging of the bell. Below is appended a list of the sizes of rope, which experience has shown to be suitable for bells of various weights:

The tolling hammer rope can be of any size, however small. We furnish, without extra charge, all necessary rope, manufactured of best manila stock, soft laid and pliable, and of graded sizes.

For bells of 100 lbs. to 350 lbs.	$\frac{3}{8}$ in. diameter.
For bells of 400 lbs. to 700 lbs.	$\frac{1}{2}$ in. diameter.
For bells of 800 lbs. to 1000 lbs.	$\frac{5}{8}$ in. diameter.
For bells of 1200 lbs. to 2000 lbs.	$\frac{3}{4}$ in. diameter.
For bells of 2500 lbs. upward	$\frac{7}{8}$ in. diameter.



METROPOLITAN LIFE INSURANCE BUILDING. TOWER 700 FEET HIGH. ARROW SHOWS WHERE BELLS ARE PLACED.

THE WORLD'S HIGHEST BELLS

From "Daily Attractions in New York"

MOUNTED on pedestals between the marble columns outside the 46th story of the 50-story Metropolitan Life Insurance Tower in New York City, are four large bells, which are said to be hung twice as high above the ground as any others in the world. These bells, made by the Meneely Bell Co. of Troy, N. Y., a firm consisting of father and three sons, whose ancestors cast the first bells made in America, produce the famous Handel "Cambridge Quarters"; the motive power being derived from mechanism operated by the tower clock. The bells are of the following weights and tones: 1500 lbs., G; 2000 lbs., F; 3000 lbs., E flat, and 7000 lbs., B flat. Four notes are struck at the first quarter, eight at the second, twelve at the third, and sixteen at the hour, followed by the hour stroke on the large bell.

All previous records of the sound carrying of bells have apparently been broken by the distance at which these bells may be heard. Situated at the top of the tallest structure in the world having bells, and easily ten times higher than the average church bell, the sound waves are unobstructed. Voyagers at sea, beyond Sandy Hook, fully twenty-eight miles from the tower; and others on the Hudson River boats, equally as far away to the north, have frequently reported hearing the bells at that distance; and yet, so soft are the tones, they are listened to with pleasure by visitors to the observatory gallery, one story below their location. To witness and hear, at close range, the chiming of the quarter-hours is one of the features of "Seeing New York."

M E N E E L Y B E L L S

The renowned "Cambridge Quarters," slightly varied, are struck as follows:

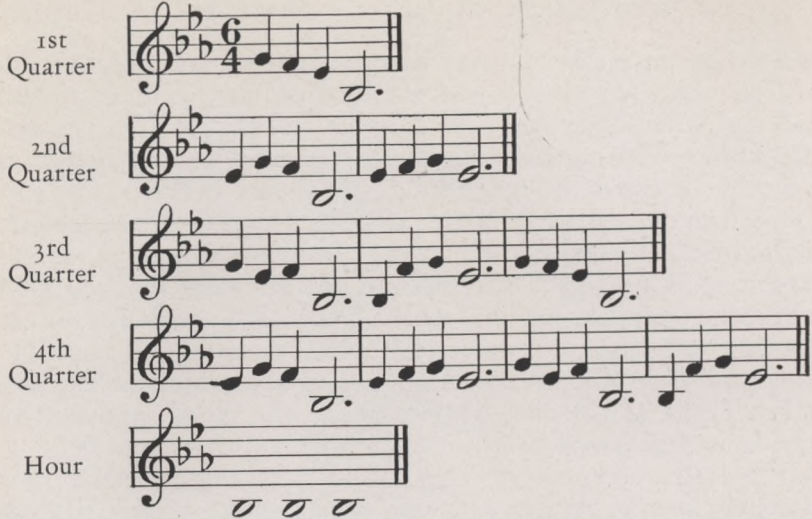
1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

Hour



CHIME OF 12 BELLS ON ESTATE OF THE LATE CHARLES N. VILAS AT ALSTEAD, N. H.



CHAPEL AT THE THEOLOGICAL SEMINARY OF ST. MARY OF THE
LAKE, MUNDELEIN, ILL.



MOST REVEREND MAURICE F. MCAULIFFE, D.D., BISHOP OF HARTFORD, BLESSING THE BELL DONATED BY THE LATE DANIEL F. SHEA, BLIND AND DISABLED VETERAN OF THE WORLD WAR, TO ST. MARY'S CHURCH, NEWINGTON. ASSISTING THE BISHOP ARE, FROM LEFT TO RIGHT, THE REV. JOHN CALLAHAN, THE REV. WILLIAM F. ODELL, AND THE REV. JAMES P. TIMMINS, IN CHARGE OF ST. MARY'S, NEWINGTON:

THE BLESSING OF BELLS

Reprinted from a souvenir program of the blessing of our peal of bells in St. John's Church, Rensselaer, N. Y., on Sunday, May 29, 1904 by the late Rt. Rev. T. M. A. Burke, the late Very Rev. James E. Duffy, Rector, assisting.

The blessing of bells must be performed by a bishop, or by a priest having the necessary faculties from him. The bishop begins by reciting, alternately with the clergy present, several of the psalms of King David, wherein is set forth the great mercy of God, and the confidence we have in His power to save us from our enemies. He then rises and blesses the water to be used in

the ceremony. The bells are then washed and cleansed with this water, both inside and outside. This is to indicate that the bells are to be clean instruments of a pure and holy religion, and are thus cleansed before they are permitted to send forth a sound in the service of God. From this ceremony the blessing of a bell is sometimes called its "baptism," and sponsors are appointed for the bell. The bishop then reads six other psalms, and recites a prayer, in which reference is made to the command given by God to Moses to make trumpets for calling the people together for the sacrifices, and begging that at the sound of these bells the devotion of the people may be enkindled; that all the wiles of the evil spirit may be defeated; that all disturbance of the elements may be calmed; that the air may be healthful; and that the spirits of evil may depart through the power of the sign of the cross marked upon the bells.

The bishop then takes the oil of the sick and makes seven signs of the cross on the outside of the bell; and then signs the inside with four crosses using the holy chrism, reciting at each sign the words: "May this signal (bell), O Lord, be sanctified and consecrated. In the name of the Father, and of the Son, and of the Holy Ghost. Amen." This sevenfold unction may have reference to the words of the royal prophet: "Seven times a day I give thee praise, O Lord!" (Ps. 118). The fourfold unction with the chrism may be said to denote that the sound of the bell is to go forth to the four points of the compass. He then recites other prayers calling for spiritual and temporal blessings, and protection. Particular stress is laid in all these prayers on the power of the sound of the bells to expel evil spirits and calm disturbances of the elements. This is not a superstition, as we do not attribute such power to the bells themselves; but we hope that God, who frequently makes use of inanimate things to bestow His graces, will be mindful of the prayer of the church and the blessing invoked upon the bells at the time of their consecration, and, at the sound of these bells, protect His people from all harm. The bishop next places a censer with burning incense under each bell to express the devout prayers to which the bells are to call the people. Prayer, in the language of Scripture, is likened to the sweet odor of incense.

The ceremony of the blessing is concluded with the reading of the gospel taken from St. Luke (10:38-42), which narrates the reception of Christ in the home of Martha and Mary, where the busy Martha complained that Mary did not help her in the work, but sat at the feet of the Saviour hearing His words. Our Lord declared that Mary had chosen the better part. This teaches us that, at the call of the bells, we should leave all our occupations and appear in the house of God, where, like Mary, we may listen to the word of Christ, and offer up our prayers to God.

BELLS



REPLICA OF THE FAMOUS "OLD LIBERTY BELL," MINUS THE CRACK, WEIGHING 2,000 POUNDS, MADE BY US FOR HENRY FORD AND PLACED IN THE TOWER OF THE INSTITUTE OF TECHNOLOGY AT DEARBORN, MICHIGAN

It is impossible to trace bells to their origin; they were commonly known in the earliest ages, and are thus referred to by the most ancient writers. Doubtless bells so called, were at first little more than concave pieces of metal, the natural sounds of which suggested their use for certain purposes, and in this form their origin may, quite possibly, be said to date from the discovery of the sonorous qualities of metals. As to the antiquity of bells, an old painting of King David represents him as playing with a hammer upon a number of bells hung up before him, while one old writer gravely asserts that

Tubal Cain, "the instructor of every artificer in brass and iron," formed the sounding metal into a kind of rude bell, and that Noah employed a similar instrument to summon his ship carpenters to their work. The thorough knowledge possessed by the ancients in the working of metals renders such statements not altogether absurd.

It may be added that bells appear to have been almost universally, as well as anciently, known. Rude tribes, inhabiting the remotest islands in the midst of the sea, have been found in the possession of bells. Those taken from the tombs of the Peruvians, and some small bells brought by the trading canoes of Indians to Columbus, at Cape Honduras, show that they were known in America before its discovery by Europeans. The caldrons of Dodona, which closely resemble the Indian gong, are known to have been of very ancient origin. Possibly the oldest bells in the world, of which there is any information, may be some Assyrian bells, found by Mr. Layard in the palace of Nimrod.

The word bell is derived from the Anglo-Saxon *bellan*—to roar. Burder, in his writings of the East, says that bells derived

their name from the Sun, which was called Baal or Bel, from his supposed dominion over all things; that he was considered the author of vibratory motion and the source of musical sound, and that such instruments as produced sound by percussion were called *bells*.

Bells of small size were first in use. They are referred to by Moses in the book of Exodus as attached to the vestment of the high priest in the sanctuary; by the prophet Isaiah, as worn at the feet of the women, and by the prophet Zachariah, as hung on the necks of horses. The ancient Persians had bells attached to their royal costumes, as in latter days the chief men and civil officers of the Germans had them suspended from their garments. In Egypt and other Eastern countries girls wore strings of bells about their ankles, as may be seen in Cairo at the present day. They were used in the camps and garrisons of the Greeks, were hung in triumphal cars, were sounded in markets, proclaimed feasts, preceded funeral processions, and were, sometimes, used in the temples. They were also hung on the necks of malefactors on their way to execution, and from this Greek custom, it is said, was derived the Roman one of hanging a bell and a scourge to the Emperor's chariot that, in the height of his prosperity, he might be admonished against pride, and be mindful of human misery. The Romans used bells to announce the hours of bathing and public business, and to assemble families. A silver bell was the prize run for at races, hence the expression, "Bearing away the bell." The ancient shepherds attached bells to their sheep, by the sound of which, it was thought, they grew fat. Bells were also hung about the necks of horses, by both the Greeks and the Romans, to accustom them to noise and prepare them for battle, and it was from this custom that a person who had not been tried or trained was called "One not used to the noise of the bell."

It is generally understood that large bells, or those of expanded form, were first made by the Christians, but they were undoubtedly used in China, in religious worship, at least two thousand years before the Christian era. It is not fully known who first introduced bells into Christian churches. Many writers claim that Paulinus, Bishop of Campania, in Nola, Italy, first used them A.D. 400, but he makes no mention of bells in a detailed account of his churches. One writer states that this man simply suspended a large brass kettle which, being struck



SPECIAL SHIP'S BELL MADE BY US FOR THE FAMOUS U. S. FRIGATE CONSTITUTION KNOWN IN HISTORY AS "OLD IRONSIDES"

THE COST OF RECONDITIONING THIS OLD MAN-OF-WAR WAS BORNE BY SCHOOL CHILDREN AND PATRIOTIC CITIZENS THROUGHOUT THE UNITED STATES

notified the inhabitants when prayers began. Others assert that church bells were first used by Pope Sabinianus, about the year 600, to distinguish the canonical hours, but we read of bells being in use by the Bishop of Llandaff, in his churches, in the year 550. Certain it is that Christian architecture and the introduction of turret, or church bells, were nearly contemporaneous events, and that it was solely for the support of bells that church towers were first erected. Indeed, from an early time, bells were regarded as a necessary adjunct to every church edifice, as is quite commonly believed at the present day. This fact is clearly recognized in a Canon of the Church of England, which specially directs that "parishes must furnish bells and bell ropes."

Associated in various ways with the ancient ritual of the church, bells seem to have acquired a kind of sacred character, and for many years, in Europe, the bell foundries appear to have been set up in the religious houses, and the casting attended with elaborate ceremonials, the priests, abbots, and frequently the bishops being the master founders. For a long while it was the priest's office to ring the bells. At an early period bells were blessed by the Roman Catholics with solemn ceremonies, as they were consecrated to the duty of calling worshippers to their religious rites. The bells were also washed and named, and it was the usual custom to give sponsors to them. This custom is common at the present day, the sponsors now, as then, usually being persons who have donated the bells, in whole or part, to the church. An account is given of the great bell of the Lateran Church, being named, in the year 968, by the Pope John XIII, only for himself, John.

In the middle ages bells had attained a very prominent position in the service of the church and community. An old writer describes their general uses as follows:

"To call the fold to church in time,
We chime.
When joy and mirth are on the wing,
We ring.
When we lament a departed soul,
We toll."

Many of their special uses were designated by the names given to certain bells.

Thus, the *Ave Maria* or *Angelus Bell*, which was tolled three times each day, and at its hearing every one was enjoined to recite the Angelus and to betake himself to meditation and prayer.

The *Vesper Bell* was the call to evening prayer.

The *Complin Bell* summoned the people to the last religious service of the day.

The *Sacring Bell* was rung during the celebration of the mass at the elevation of the host, at the Sanctus, and at other solemn services. When rung at the consecration it is called the *Agnus Bell*, and when rung at the words, "*Sanctus, sanctus, sanctus, Dominus Deus Sabaoth,*" is called the *Sanctus Bell*, and whoever hears it is expected to prostrate himself. The notification of these portions of the service are now usually made by a small hand-bell, but in pre-Reformation English churches a large bell was rung by one of the acolytes.

These uses of the bell are still fully observed in the Roman Catholic Church.

The *Passing Bell* was so named from being tolled when any one was passing out of life, that those who heard it might pray for the soul that was leaving this world. From this custom, doubtless, sprang that, quite common in many parts of the world, of slowly tolling the bells at deaths, or while funerals are being conducted.

The *Curfew Bell* (*couvre-feu*) was rung as a signal for the inhabitants, who lived in wooden houses, to put out their fires and retire for the night, and though, for ages, its only use has been to "toll the knell of parting day," the practice in many countries is still continued.

The *Tocsin*, or *alarm bell*, was in early use, and was generally suspended in castles and fortresses to announce the approach

* 38 *



MOTHERHOUSE OF THE SISTERS OF PROVIDENCE, BRIGHTSIDE, HOLYOKE, MASS.

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of the enemy. Upon peals of bells the alarm was given by ringing the bells in the reverse manner—that is from the lowest in tone to the highest. Bells are still commonly employed for alarm purposes, and in case of fire their use has been greatly systematized by signaling the exact location of danger.

Bells were at first, as has been stated, of a form quite unlike that seen at the present day. The Chinese formerly made their bells nearly square in shape. At one time it was the custom to make bells of several pieces of metal welded together, but these lacked vibration, and were useless. The metals employed in the manufacture of the oldest bells of which we have any record were, however, the same as those now in use, namely, copper and tin; the proportions, alone, being different. And here it might be stated that the long experience of the ancients, as well as the careful tests of later years, has clearly proven that these are the only metals capable of producing a proper ringing alloy. Iron and steel, and even silver and gold, frequently entered into the composition of bell-metal, in whole or in part, but always to the injury of the tone. The first two named metals have been found the least adapted for use in this manner, owing to the harsh and disagreeable sounds which they are capable of producing, while, on the other hand, silver and gold, being more in the nature of lead as compared with copper and tin, are incapable of producing the full, clear tone requisite in a bell. "Persons," says an English writer, "speak as familiarly of sweetening the tone of a bell, by the introduction of a little silver, as they would of sweetening a cup of tea with a lump of sugar. This is a dream." Quite as great a mistake is the common belief that our ancestors employed silver, more than we do, in the manufacture of bells, except that it was customary to cast a few tributary coins into the furnace during the process of melting. It is unnecessary perhaps, to add that the quality of a bell depends not only upon the nature of its composition, but quite as much upon its shape and the proper proportions of its height, width and thickness.

The tone of a bell is the result of vibrations. When struck, a bell changes shape, and these repeated changes constitute its vibrations. At one moment a bell is an oval, with its longest diameter at exact right angles to the position of its longest diameter at the preceding instant. The number of vibrations produced in a bell in a given time varies, directly, as the square



THE CITY AND COUNTY BUILDING AT DENVER, COLO. WHICH CONTAINS OUR HEAVY WESTMINSTER PEAL
AS A MEMORIAL TO THE LATE ROBERT W. SPEER, FORMER MAYOR.

of the thickness, and inversely, as the bell's diameter, or as the cube root of its weight. By this knowledge the production of any given tone in a bell is readily secured. In a number of bells forming a complete octave the diameters would appear in the following proportions: C 1, D 8—9, E 4—5, F 3—4, G 2—3, A 3—5, B 8—15, C 1—2. In fact the diameters of bells correspond to the lengths of musical strings. In proof of this principle some instruments of bells, to which violin bows were attached, were produced in Italy many years since. It might be stated that the tone of a bell, as it reaches the ear, is made up of different tones blended. Like other sounds, bell tones are readily reflected. There is, also, a force in the sound waves of a bell, which is readily perceived by any one standing near one of considerable size, when ringing. Even the Swiss muleteers are said to tie up their little bells, at certain places, lest their tinkle should shake the delicately poised snow and bring down an avalanche. The distance to which the sound of bells, under peculiar atmospheric conditions, is sometimes heard, is very remarkable, and this fact has frequently given credence to the pleasing illusions of sailors at sea and travelers upon the desert, thousands of miles from home, listening, in trembling wonder, to the sounds of their own village bells.

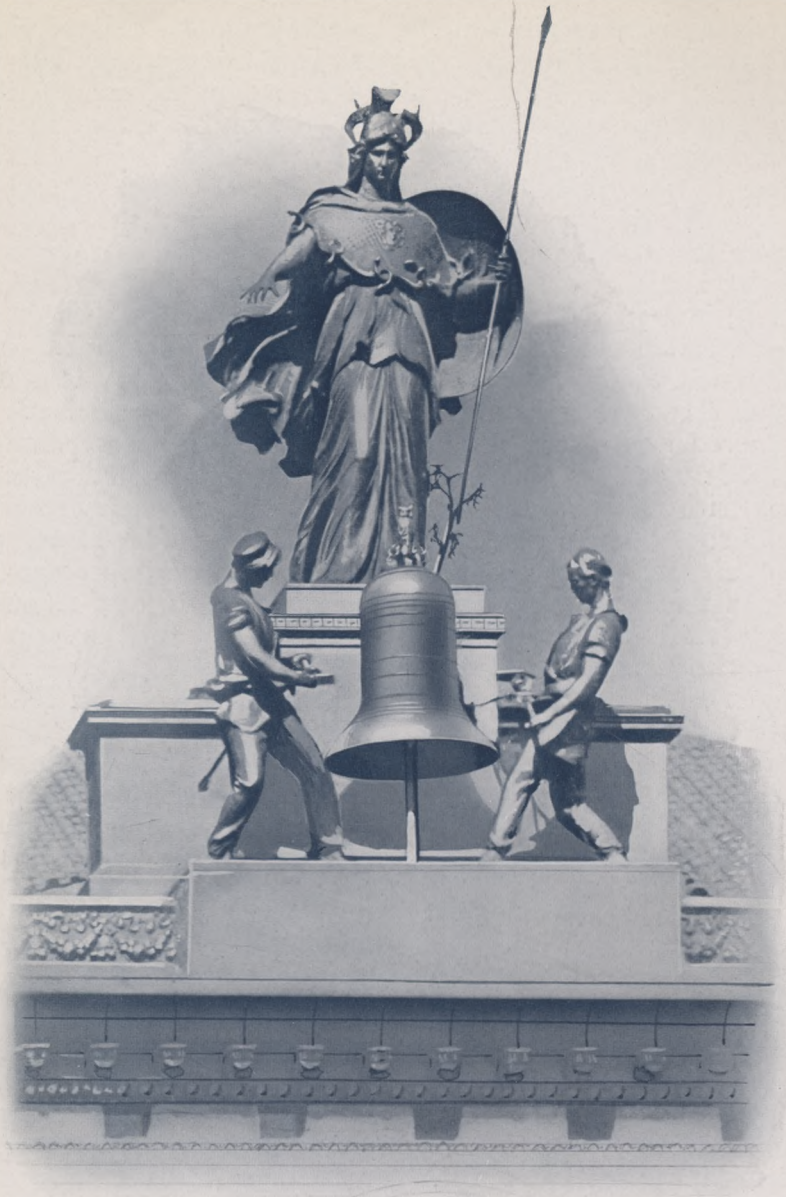
"If a bell have any sides the clapper will find 'em," said Ben Johnson, and yet the proper ringing of bells is a matter requiring a great deal of experience and skill. In some parts of the world this practice has been entered into with much spirit, especially in England, where it has become truly national, and has secured for that country the title of the "Ringing Isle." The same feeling pervades the literature of English bell ringing, which, from the simple nursery rhyme of "Gay go up, and gay go down, to ring the bells of London town," becomes quite startling in the *plain bob triples, bob majors, bob majors reversed, double bob majors, and grandsire bob caters* of the players' role, and yet one enthusiastic writer published, in 1618, a book of 475 pages to prove that the principal employment of the blessed in heaven will be the continual ringing of bells. "Great," says Southey, "are the mysteries of bell ringing. And this may be said in its praise, that of all devices which men have sought out for obtaining distinction by making a noise in the world it is the most harmless." The number of *changes* which can be played upon a chime of twelve bells is no less than 479,091,600.



THE GREAT BELL OF MOSCOW, "CZAR KOLOKOL"

As would be naturally supposed superstition has enlisted bells in its service. Josephus says that the ancients regarded bells as signifying thunder. In many cases they are looked upon as the signals of victory and dominion. Historians state that in the year 610 the army of Clotharius was frightened from the siege of Sens by the ringing of the bells of St. Stephens, and that Calixtus III employed the same device against the dreaded Osmans. It was long imagined that the ringing of bells had power to avert the destruction of lightning, storm and pestilence, though, in later days this influence was frequently ascribed to natural, rather than to supernatural causes, in the belief that their sound purified the air. Even at the present day it is the custom, throughout the vinelands of France, to ring the bells at the approach of storms, for the purpose of breaking impending clouds. It was, also, a common belief, that the sound of bells struck with terror the evil spirits which were in waiting to seize upon a soul departing from the body, and, in order to accomplish this purpose the more effectually, bells were frequently made of monstrous size. In view of their use in this manner, many persons bequeathed large sums of money for the support of favorite bells, which were rung at the time of their decease. There is a bell in England called "Black Tom of Scott Hill," which is said to have been an expiatory gift for a murder. This bell is tolled on Christmas Eve, as at a funeral, and its ringing is called the "Devil's Knell," under the supposition that the devil died when Christ was born. It was a popular idea that demons affrighted by the sound of bells calling Christians to prayers, would flee away. The Turks, however, believed that the sound of bells disturbed the repose of souls, which, as they supposed, wandered in the air. They also regarded them as the symbols of sinful infidelity, and a most dangerous foe, and hence forbade the Greek Christians the use of bells after the taking of Constantinople. Many stories are related of bells which would not suffer themselves to be carried away from their proper resting places, or which, if carried away, would instantly become dumb. Severe judgments were predicted against those who destroyed, carried away, or in any manner misused bells, and special honor was conferred upon any one born within the sound of certain bells.

Akin to this superstitious feeling is the sincere affection with which bells have often been regarded. It is said of a friar that,

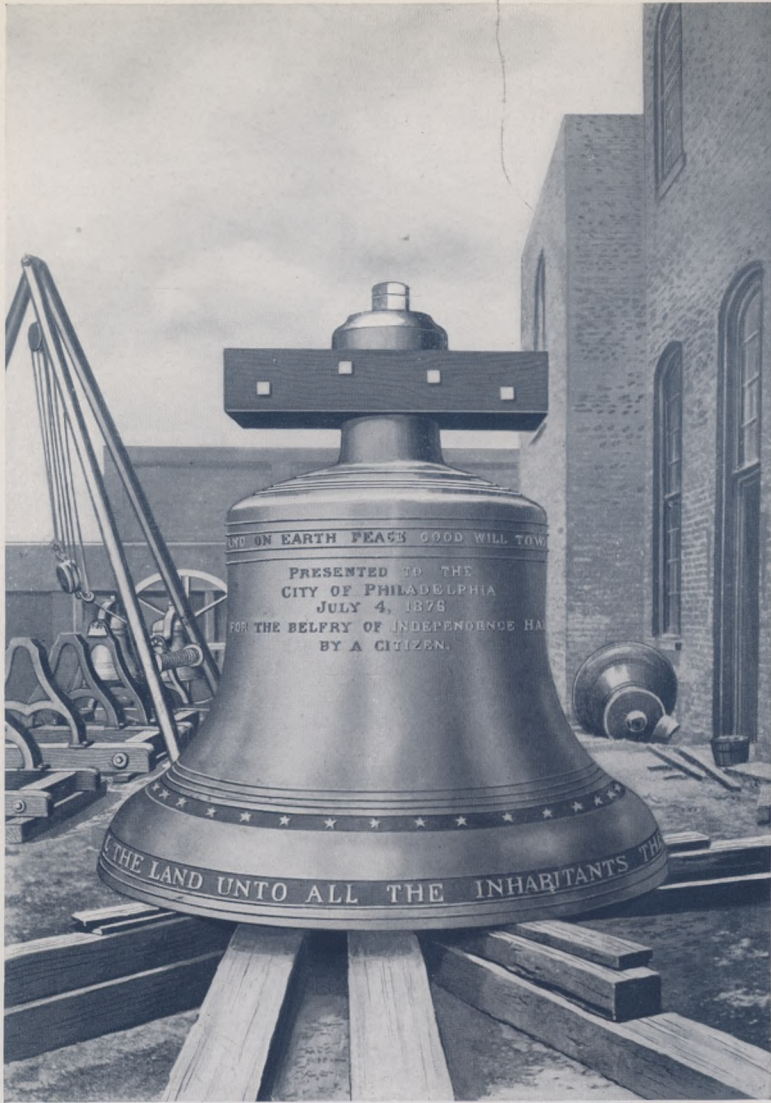


NEW YORK HERALD BELL RINGERS
Now on the Campus of New York University
THE BELL, OF SPECIAL DESIGN, WAS CAST BY MENEELY BELL CO.

upon the destruction of his monastery, he regretted nothing so much as the loss of a favorite bell, which, after diligent search, he found had been removed to a village church, where he submitted himself to become a common laborer, that he might end his days within hearing of it.

Any history of bells would be far from complete without a reference to the great bells of the world. In the city of Moscow before the revolution, there were several hundred large bells, and this number has been greatly increased. The fact that the Russians regard the sound of bells not only as a holy summons to church, but as a part of the very act of worship, readily accounts for their love of bells and their extravagance in procuring them. Travelers inform us that the Russians never tire of ringing their heavy bells, and that in Moscow, on the Sabbath day, the sounds, which are produced without any regard to harmony, are absolutely painful to the ear, and prove an effectual check to conversation on the streets. The "Great Bell of Moscow," or Czar Kolokol (Emperor of Bells), deserves first notice. This is, by far, the largest bell in the world. Its weight is about 492,800 lbs., and its cost, in bell material, is estimated at fully \$340,000, to which, reliable writers inform us, more than \$1,000,000 were added in precious jewels, plates, etc., by the nobles, at the time of casting. The dimensions of this bell are about nineteen feet in height, and nineteen feet in diameter. It was cast by order of the Empress Anne, in the year 1733, from the metal of a gigantic predecessor which had been greatly damaged, and it is ornamented on the side with several figures, one of which represents the Empress in flowing robes. It is not suspended. Dr. Clark in his "Travels" says: "The Romans might as well have attempted to suspend a first-rate line of battleship, with all its stores and guns," but this is a mistaken idea. The bell was originally suspended from beams, which, being destroyed by fire, permitted the heated bell to fall to the ground and break, since which time it has remained dumb. The Emperor Nicholas had it raised in 1836, and placed upon a low circular wall in the Kremlin. It is now used as a chapel, the opening in its side being large enough to admit two men abreast. The bell is carefully guarded, and the Russians will not allow a single particle of its metal to be taken away.

There is another enormous bell in Moscow, given by the Emperor Bodis Godunof to the Cathedral of Moscow, which



INDEPENDENCE HALL BELL
WEIGHT, 13,000 POUNDS
CAST AT THIS FOUNDRY IN THE YEAR 1876

weighs fully 120,000 lbs. This bell is suspended in the tower of Ivan Veliki, and when it is rung, which is thrice a year, all of the other bells are silent. Its mighty voice is said to "produce a tremulous effect throughout the city, and a noise like the roaring of distant thunder." There are, in this same tower, thirty or forty other bells, which, although of less size, are very large, some of them weighing several tons each. The bells of Russia are fixed immovably to their beams. Their tongues are slung by means of leather bands, and are moved by ropes drawn in such a manner as to cause the blows to fall upon the surface at irregular points.

The bells of China, where large bells had their origin, rank next in size to those of Russia. Indeed it is not uncommon throughout China to see enormous bells lying upon the ground, their weight having broken down the towers in which they were suspended. Though there are many of these, each bell seems to be of excellent workmanship, and nearly all are richly ornamented with inscriptions, both inside and out. These bells have not the merit of a tolerably fair tone, like those of the Russians, and are of most inferior shape, while their dulness of sound is increased by their being struck with wooden mallets instead of iron clappers. Both the bells of China and its gongs, which are famous, are made of a peculiar alloy, remarkable in the hideous tones which it is capable of producing.

The "Great Bell of China," in Peking, weighs 120,000 lbs., and is fourteen feet in height and twelve feet in diameter. In Nankin there is a bell, now fallen to the ground, which weighs 50,000 lbs.

In Japan, bells are very commonly used. They are much the same in form and composition as the bells of China, and are found in every size and number. They are suspended in low towers, near the temples, and are sounded by means of wooden beams, swinging from the roof, to which straw ropes are attached. In entering a temple in Japan, or at the commencement of worship, it is the custom to sound the bell in order to arouse the deity, and have him wide awake to the calls of the devout. The bell of the Buddhist monastery, Chi-on, in Kioto, Japan, was cast in 1633, and weighs 165,760 lbs.

The bells of Holland and neighboring countries are also remarkable for their size and number.

A bell of special interest in this country is the famous "Liberty Bell." This bell was cast for the State House in Philadelphia in the year 1753, and upon it, though made twenty-three years before the Continental Congress met in the State House, were



placed the words of the Bible: "*Proclaim Liberty throughout all the land unto all the inhabitants thereof.*" It was under this bell that the representatives of the thirteen colonies first "proclaimed liberty," and this bell, with its iron tongue, started the tidings throughout the land. The bell subsequently broke when ringing a fire alarm. Later, it was suspended, under the direction of our Mr. Clinton H. Meneely, by a chain of thirteen links, from the ceiling

in the hall of the State House in Philadelphia.

In the centennial year, 1876, a bell weighing thirteen thousand pounds, to represent the thirteen original states, was made at this foundry and set in the tower of the old State House, above Independence Hall, just where the old bell was formerly suspended. Like the old bell it has cast, in a circle above the rim, the inscription: "*Proclaim Liberty throughout all the land unto all the inhabitants thereof.*" This fine bell is in constant use sounding, with its deep tones, the hours of the day.

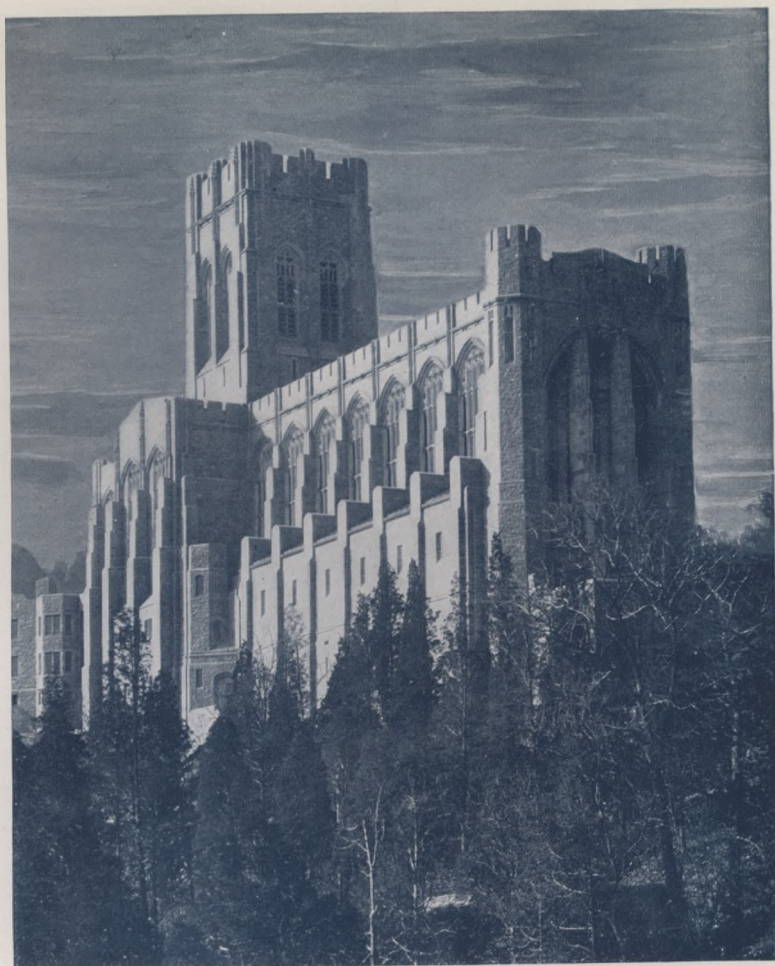
Some of the inscriptions found upon bells are interesting in showing the religious feeling, superstition, or amusing sentiment prevailing at different times and places.

The following are in the form of invocation:

- "May my sound please Thee, O Christ, Heavenly King."
- "Our motion speed the Redeemer's praise."
- "Jesus regard this work and by Thy strength prosper it."

The following are of more recent adoption:

- "O come, let us worship."
- "Make a joyful noise unto the Lord."
- "Holiness unto the Lord."
- "Let him that heareth say, 'Come.'"
- "My tongue shall speak of Thy praise."
- "Glory to God in the highest."
- "To live in hearts we leave behind is not to die."
- "Come to God today."



THE WEST POINT CADET CHAPEL

The chapel at the United States Military Academy, West Point, is one of the most beautiful and picturesque church buildings in America. Its massive tower contains our chime of twelve bells given by Mrs. Eba Anderson Lawton in memory of her father, the late Major-General Robert Anderson, a graduate of the Class of 1825, whose defense of Fort Sumpter at the outbreak of the Civil War is familiar to all readers of American history.

* 50 *



GRACE CHURCH, BROADWAY AND 10TH STREET, NEW YORK
FROM A GROUP PHOTOGRAPH OF THE CHIME OF TWENTY BELLS, EACH OF WHICH IS AN INDIVIDUAL MEMORIAL
TAKEN BEFORE THE INSTALLATION BY THE MAKERS, MENEELY BELL CO., TROY, N. Y.

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The following, in whole or in part, is often found on both old and new bells:

*Laudo Deum Verum,
Plebem voco,
Congrego clerum
Defunctos ploro,
Pestem fugo,
Festa decoro,*

(I praise the true God,
I call the people,
I convene the clergy,
I bewail the dead,
I dispell the pestilence,
I grace the festival,

*Funera plango
Fulgura frango,
Sabbata pango,
Excito lentos,
Dissipo ventos,
Paco cruentos.*

I bemoan the burial,
I abate the lightning,
I announce the Sabbath,
I arouse the slothful,
I scatter the winds,
I appease the revengeful.)

Upon a bell in Cambridgeshire is the following:

"*Dulcis sisto melis campania vocor Gabrielis.*" (I am called the sweet toned bell of the Angel Gabriel.)

On a famous town bell in Germany—

"Mynen naem is Roland; als ik klep is er brand, and als ik fon is er victorie in het land." (My name is Roland; when I toll there is fire, and when I ring there is victory in the land.)

On one in Derbyshire—

"Mankind like me are often found,
Possessed of naught but empty sound."

On one in Worcestershire—

"If you would know when we was run,
It was March the twenty-second, 1701."

On a bell at Binstead—

"Samuel Knight made this ring,
In Binstead steeple for to ding."

On one in Oxfordshire—

"I ring to sermon with a lusty boom,
That all may come and none stay at home."

On one in Berkshire—

“At proper times my voice I’ll raise,
And sound to my subscriber’s praise.”

On one in Warwickshire—

“I sound to bid the sick repent,
In hope of life when breath is spent.”

On one in Hampshire—

“Unto the church I do you call,
Death to the grave will summon all.”

On one in Derbyshire—

“When of departed hours we toll the knell,
Instruction take and use the future well.”

On one in the Carlisle cathedral—

“I warn ye how your time passes away. Serve God, therefore, while life
doth last, and say, ‘*Gloria in Excelsis Deo.*’ ”



THE BELLS OF RIVER BRIDGE
CAMPANILE AND CHIME UPON THE RIVER RIDGE FARM, FRANKLIN, PA., MRS.
CELIA SIBLEY WILSON, OWNER. THIS CHIME WAS PURCHASED BY THE
LATE HON. JOSEPH C. SIBLEY OF PENNSYLVANIA



CAMPANILE AND CHIME ON CAMPUS OF UNIVERSITY OF NORTH
CAROLINA, CHAPEL HILL, THE GIFT OF JOHN M.
MOREHEAD AND RUFUS L. PATTERSON

On the great bell of Glasgow cathedral—

“In the year of grace, 1594, Marcus Knox, a merchant in Glasgow, zealous for the interests of the reformed religion, caused me to be fabricated in Holland for the use of his fellow citizens in Glasgow, and placed me with solemnity in the tower of this cathedral. My function was announced by the impress on my bosom, ‘Ye who hear me, come to learn of my holy doctrine,’ and I was taught to proclaim the hours of unheeded time. One hundred and ninety-five years had sounded their awful warnings, when I was broken by the hands of inconsiderate and unskillful men. In the year of 1790 I was cast into the furnace, refounded at London, and returned to my scared vocation. Reader! thou also shalt know a resurrection—may it be unto eternal life.”

Of bells, it can, with truth, be said that ever since their introduction, they have been highly regarded by all nations, the Turks, alone, excepted. Even the Puritans, although the enemies of church music and of almost everything which had been put to superstitious use, did not wage direct war against bells. Certainly there is nothing of simple human contrivance for



which the community, in whatever locality, has stronger regard, or with which associations are more deeply mingled. And there is a feeling connected with bells which has caused them to be considered, by the people of nearly every nation, as not inappropriate memorials to departed relatives and friends.

Says a distinguished English writer: "From youth to age the sound of the bell is sent forth through crowded streets, or floats, with sweetest melody above the quiet fields. It gives a tongue to time, which would otherwise pass over our heads as quietly as clouds, and lends a warning to its perpetual flight. It is the voice of rejoicing at festivals, christenings, and marriages, and of mourning at the departure of the soul. From every church yard it summons the faithful of distant valleys to the house of God; and when life is ended they sleep within the bell's deep sound. Its tone, therefore, comes to be fraught with memorial associations and we know what a throng of mental images of the past can be aroused by the music of bells."