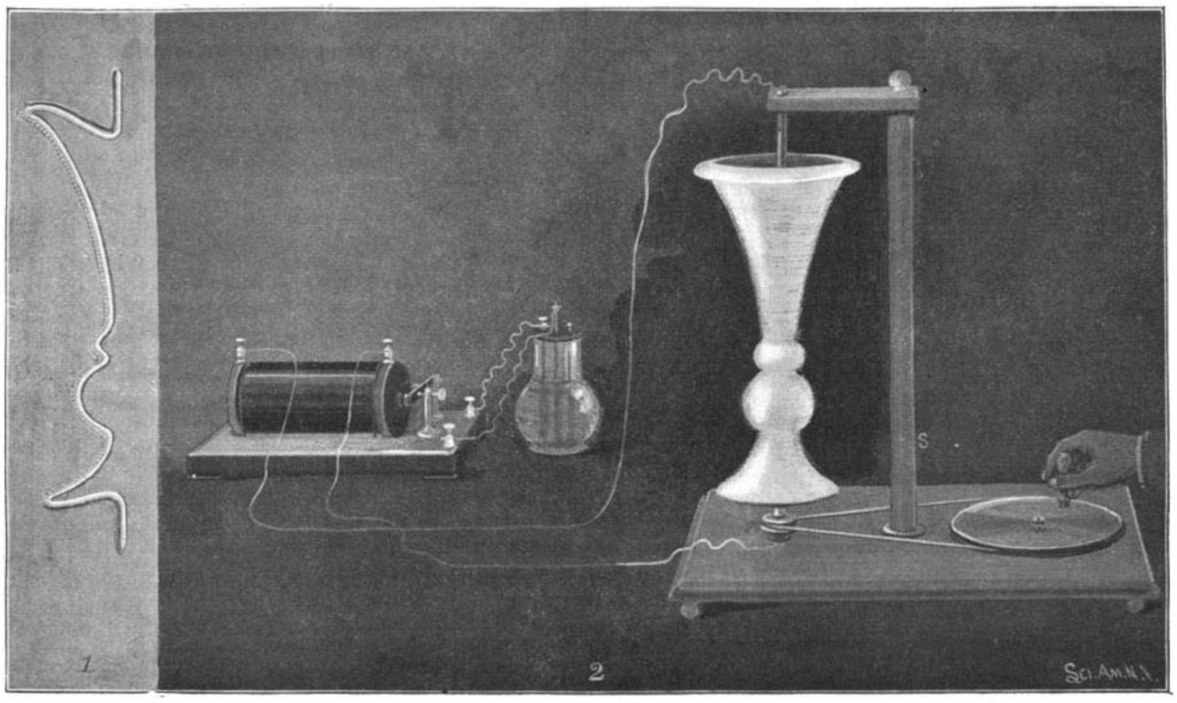
A BEAUTIFUL EXPERIMENT.

BY H. B. DAILEY.

To the many amateur experimenters in static electricity who have been lured into this fascinating pastime by the excellent chapters in "Experimental Science" devoted to this branch of physics the following beautiful experiment would, in the opinion of the writer, prove of more than ordinary interest:

A piece of slender glass rod or tubing is bent in an alcohol flame into the shape shown in Fig. 1. By means of the arrangement in Fig. 2, the glass is supported so as to revolve freely in an upright position, its lower end resting loosely in a shallow hole in the wooden base of the instrument, while its upper end is held in like manner by the horizontal wooden arm at the top of the insulating standard, S. A small wooden pulley, P, cemented to the lower extremity of the glass and belted by means of a thread on to the hand wheel, W, furnishes a means of rapid rotation. Along the whole length of the glass is cemented by means of shellac a very narrow strip of tinfoil, which is divided at short intervals with the point of a penknife; the foil on the two straight extremities being left intact.

The glass is set revolving and a current from an induction coil or influence machine is passed through the tinfoil, illuminating all the cut spaces. If the glass has been skillfully bent and the discharge is sufficiently rapid, the effect is one of startling beauty.



NOVEL ELECTRICAL EXPERIMENT.

Persistence of vision transforms the revolving luminous glass into a perfectly symmetrical vase, glimmering, phantomlike, out of the darkness, and bedecked with thousands of jewels and flashes of shimmering light, having the appearance of the most delicately fashioned wire work, wrought in curves of sparkling fire. To insure the proper shape of the glass, a sketch of a vase of the desired form may be drawn upon a piece of smooth board and the glass made to conform with the outlines of one of its sides. The vase may be made 8 or 9 inches in height.

The ordinary spiral tube familiar to experimenters gives an exceedingly beautiful effect when revolved as above, the spiral being multiplied many times by persistence of vision.

THE BOILERS AND BULKHEAD DOORS OF THE "CHICAGO."

The unarmored cruiser "Chicago" of the United States navy was one of the original vessels of the famous "white squadron." She was launched in 1884, and on her trial trip she made 15 knots with 5,083 horse power. It was decided about three years ago to make many changes in the "Chicago," and these changes, which are almost completed, will convert her into a fast cruiser of 18½ knots, developing about 9,000 indicated horse power. New engines, of course, were required, and they were built at the Brooklyn Navy Yard, as well as the boilers shown in our engraving. The Bureau of Steam Engineering adopted a combination of the cylindrical Scotch boilers and the sectional type. The engine room is next the four Scotch boilers, then comes the blower room, then the six Babcock & Wilcox boilers. The "Chicago" will be worked under forced draught on the closed stokehold system when running at high speed. Our engraving shows a pair of the Scotch boilers, which are about 1,000 horse power each. They are placed athwartships, and our illustration supposes the visitor to be in the stokehold looking at one pair of boilers, while the other pair is at his back. The Scotch boilers all make use of a common stack, and at the level of the protective deck the stack is crossed by heavy armor bars which preserve the integrity of the protective deck.

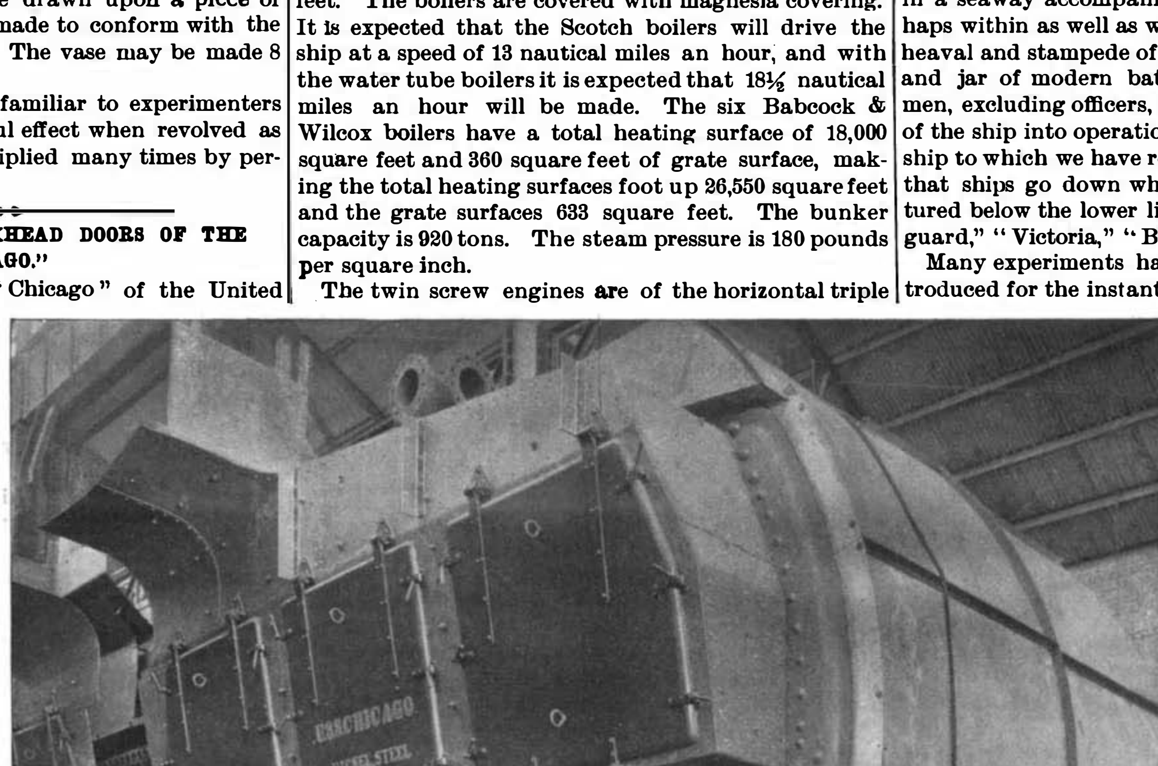
The Scotch boilers were built at the Brooklyn Navy Yard and are made of nickel steel, the sheets being 1 5/16 inches thick and the heads ⅞ inch thick. The mean diameter is 13 feet 8½ inches and the length 10½ feet. The three corrugated furnaces are 3 feet 5 inches in diameter and are all fired from the same stokehold. The length of the grate is 6 feet 8 inches. The outside measurement of the 417 tubes is 2¼ inches, and they are of a thickness of No. 10 Birmingham wire gage. The heating surface of the tubes is 1,770 square feet; the heating surface of the furnace is 134 square feet, of the combustion chamber 166 square feet, and of the tube sheets 66 square feet. The total heating surface is 2,138⅜ square feet. The grate surface is 68·33 square feet. The boilers are covered with magnesia covering. It is expected that the Scotch boilers will drive the ship at a speed of 13 nautical miles an hour, and with the water tube boilers it is expected that 18½ nautical miles an hour will be made. The six Babcock & Wilcox boilers have a total heating surface of 18,000 square feet and 360 square feet of grate surface, making the total heating surfaces foot up 26,550 square feet and the grate surfaces 633 square feet. The bunker capacity is 920 tons. The steam pressure is 180 pounds per square inch.

The twin screw engines are of the horizontal triple expansion type. The cylinders are 33½ inches, 50½ inches and 76 inches, the stroke is 40 inches and the engines make 120 revolutions per minute.

We now come to another interesting feature of the reconstructed vessel—the bulkhead doors. Lord Charles Beresford says: "It is a fact that upon the loyalty of the watertight doors, when closed, and upon the assurance that they are properly closed, depends the power of a battleship to float when wounded by ram, torpedo or a gun. It has been authoritatively stated that the cause of the loss of the 'Victoria' was that the watertight doors were not closed, and it has been constantly proved to be impossible to close watertight doors in an emergency, no matter how well disciplined and how gallant the ship's company may be. The system of closing the doors by evolution as to time invites an accident." Some very able experts contend that there should be no doors at all and that the main bulkheads should be intact to the main deck.

To the layman the number of bulkheads, doors, hatches and valves is extraordinary. Take the battleships "Indiana," "Massachusetts" or "Oregon," for instance; they have 272 watertight compartments, and the total number of watertight doors and hatches is 354. The number of valves for ventilating, draining and flooding hulls, including sea valves and pump suctions, and excluding all valves for motive power and auxiliaries, numbers 294, making a grand total of watertight doors, hatches and valves of 648. Valves are less important than doors and hatches, but when they guard a sluiceway, the passage of a ventilating pipe from one compartment to another, or a magazine flood cock, they involve the integrity of the ship in an emergency. It is hardly possible to exaggerate the sudden turmoil and shock of a collision in a seaway accompanied by fog and blackness, perhaps within as well as without the ship, the wild upheaval and stampede of being torpedoed, or the strain and jar of modern battle; and it requires about 110 men, excluding officers, to bring the cellular structure of the ship into operation when needed in the type of ship to which we have referred, so there is no wonder that ships go down when they have their skin punctured below the lower line, as for instance the "Vanguard," "Victoria," "Blanco Encalada," and "Elbe."

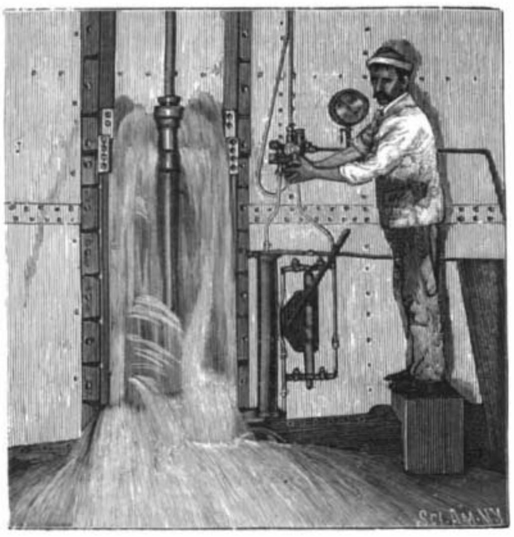
Many experiments have been tried and systems introduced for the instantaneous closing of all the bulkhead doors in an emergency. We present some engravings of one of the most successful solutions of this problem—the "long arm" system of Mr. W. B. Cowles of the construction department of the United States navy. The cruiser "Chicago" as reconstructed is provided with an installation of this system. Mr. Cowles considered that a practically perfect system would be to tie together in assorted bunches the widely distributed devices in a ship, by bringing the connecting strings from each device to a switchboard for each bunch and then assemble the switchboards into one or more central stations, from which each device can be controlled by an operator, independently, and to arrange the devices as they are needed to be operated in case of an emergency, so that this can be done with precision and full knowledge, from a point where the emergency can first be discovered. Arrangements should also be provided so that neither the emergency operation nor any other can harm the attendant or take control



A PAIR OF NICKEL STEEL SCOTCH BOILERS FOR THE RECONSTRUCTED CRUISER "CHICAGO."

out of his hands, and all watertight doors should be given an equal rank and precedence with the bulkhead of which when closed they form an integral part. The watertight doors should be capable of closing under head or rush of water, and every bunker door should be able to close through coal. A system of this kind, placing its sole manipulation in the hands of one man, is comparable to the switch and signal tower of a railway.

There are two general schemes in the Cowles long arm system—the double line and the single line. The double line is more complicated and efficient, involving an operator at the central station. The single line



BUNKER DOOR WITH CLEAR-WAY OPEN FOUR INCHES.

answers in many cases where control valves and telltales are not required at the central station. Our illustration shows the single line system as applied on the United States cruiser "Chicago."

The installation consists of eleven vertical sliding doors, all in the engine and boiler compartments, made of ¼-inch steel plates with vertical angle iron stiffeners and with manganese bronze plowshares to force its way through coal. The power cylinders for each door are made of seamless brass tubes. The system is operated by a steam accumulator and duplex pump of the Worthington type. They are placed under the protective deck. The hydraulic main is 2 inches in diameter, reduced in suitable steps. The emergency gear consists of a power cylinder with a 4-inch stroke operating the by-pass cock on the accumulator and a corresponding telltale and controlling valve in the conning tower, connected by a ⅛-inch pipe and forming a "primary circuit." This circuit consists of two cylinders with their pistons and piston rods connected by a double line of small piping. One cylinder, called the power cylinder, is connected with the device to be operated; the other cylinder, called the "telltale," is placed at the point where it is intended to operate the device. These two cylinders may be at any distance apart.

The double line of piping is so arranged that the pistons in the cylinders operate in exact accord. The power cylinder does the desired work, while the telltale cylinder reveals the position of the power cylinder and consequently that of the bulkhead door. At each door is a so-called "liberty valve," which can be started independently of the general system. Ingenious devices are provided to tighten the doors at side and bottom. One of our engravings shows the door under a head of water, with the tightening gear slacked up, and another, a bunker door, with all the tighteners in operation.

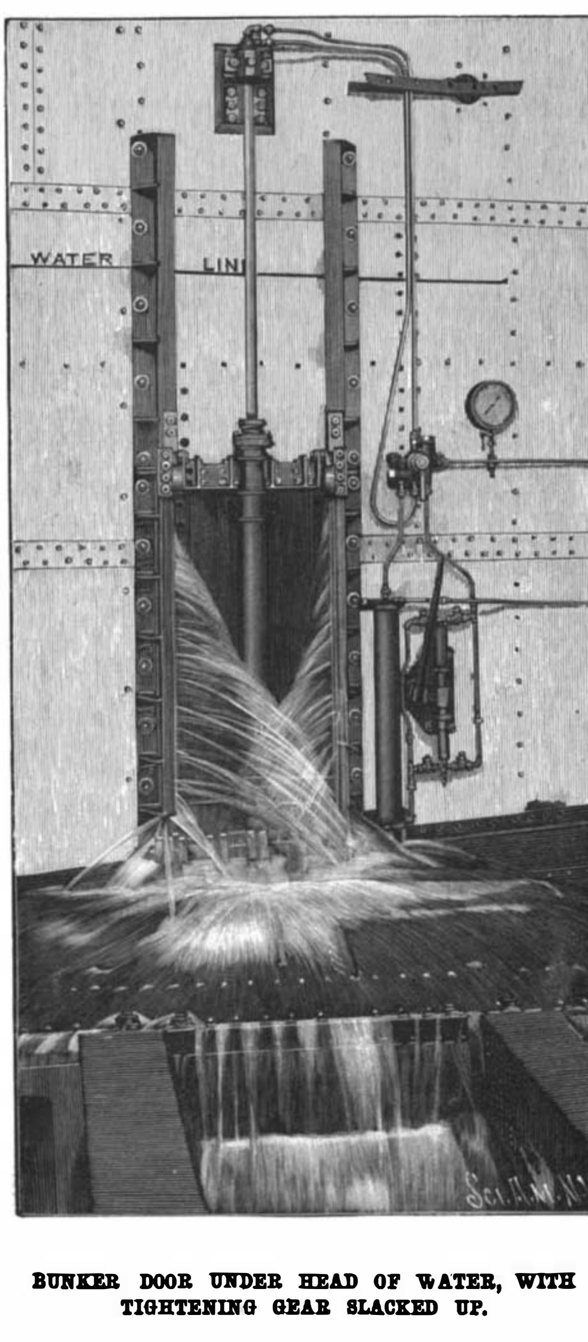
The side tighteners consist of traveling rollers held between a wedge track and a wedge bar, each of these latter being the full length of the door. The wedge track is secured permanently to the door, and the wedge bar rides with the door throughout its travel, except during the short tightening interval at the closing end of the stroke, within which the wedge bar is held stationary on the guide, thus causing relative movement between the wedge track and wedge bar on the rollers. This movement presses the wedge bar out against the guide lip, and the wedge track, with the door and seating strip, in against the seat.

The doors are of ¼-inch steel plate with 2¼-inch by 2¼-inch by ⅜-inch vertical steel angle stiffeners at side and with manganese bronze plowshare and top tightener castings stiffening, respectively, the bottom and top edges of plate; the seating strips at top and bottom are of steel ⅜ inch thick; the side seating strips, wedge tracks and wedge bars are of naval brass with Tobin bronze rollers 1½ inch diam. by 1½ inch long. The interlocking toes, pins, and rollers are of steel, with adjustable manganese bronze stop-plates and fish-plate brackets. The wedges set in the plowshare are of steel, removable, and all parts of the door are screwed together throughout in such a manner that corrosion cannot affect the screws and so that any part may be renewed without injuring any other part. It should be noticed that the side edges of the door, outside of the stiffening angles, are flexible. When the tightening gear is free the door has ⅛ inch play in its guides, both side-tips of toes is easily ground and pressed down, and falls to the floor between the webs and seat.

Care of the Wounded in Naval Warfare.

One of the most difficult problems to be faced, in the event of war, says The Medical Record, will be the care and treatment of the wounded in and after naval battles. That the decisive fighting will occur at sea is, in the opinion of most competent military experts, a foregone conclusion, and therefore every possible effort should be put forth to provide adequate accommodation and proper treatment for those who may be wounded. The fact that a battleship of the modern type is, even in time of peace, sadly lacking in the necessary facilities for caring for the sick is too well known to dwell upon, and it follows as a matter of course that these conditions will when war is in progress be sharply accentuated. In truth, the outlook as regards this phase of the situation is by no means pleasant to contemplate. Little is known of the effects of modern naval warfare on a large scale, but from the slight experience gained in the Chino-Japanese war it is certain that new methods of treating wounded men in action must be initiated, as well as of caring for them subsequently. In the days of wooden ships, those requiring surgical treatment were brought to the surgeon; in the modern man-of-war, divided into numerous compartments by steel decks and water-tight doors, such methods are impossible, and other means of succoring those in need of assistance must be devised by the surgeons. Again, the position of the surgeon will be one of much greater personal danger than was formerly the case; he will not be able to fix upon a particular spot where he can perform his necessary duties, but must be wholly guided by circumstances and must choose a sheltered place in the ship anywhere most convenient. His equipment and the means of transporting the wounded must be of the simplest.

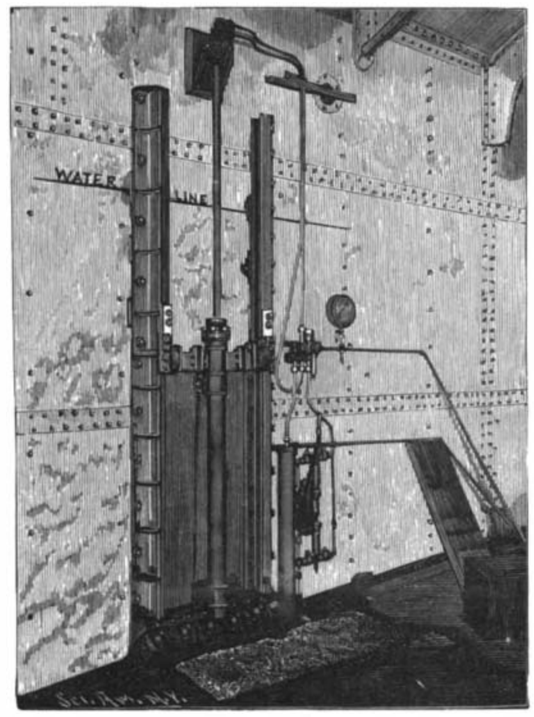
But the question of how most efficiently to care for the wounded after the engagement is perhaps more important than during the action itself. It will be impossible to give them the needed care and treatment on the ship itself, and in many instances the distance from land will be too great for the service of a hospital to be available. It would appear therefore that an ambulance ship should satisfactorily supply this want. The suggestion that an ambulance ship should accompany every fleet on active service was first made



BUNKER DOOR UNDER HEAD OF WATER, WITH TIGHTENING GEAR SLACKED UP.

by Dr. J. Rufus Tryon, formerly Surgeon-General of the Navy.

Dr. Van Reypen, the present Surgeon-General, read a paper strongly urging its adoption at the Moscow international medical congress, in which he submitted plans of such a ship. These are as follows: "The vessel as designed will be three thousand five hundred and fifty tons displacement; two hundred and seventy-five feet on the load line and three hundred feet over



BUNKER DOOR UNDER A HEAD OF WATER JUST BEFORE OPENING.

all; with twin screws and a speed of fourteen knots; fifty feet beam, and drawing eighteen feet; a coal capacity of four hundred and fifty tons, giving eighteen days' steaming at ten knots. The water tanks will hold nine thousand gallons. The ship will carry four steam launches and four barges, each barge arranged with a flying floor between the thwarts, so as conveniently to carry twelve cots on the floor. There will be beds for two hundred and seventy-four and hammock space for eighty-six, state-rooms for eight disabled officers and cot space for twelve. The forward ward on the upper deck has been left with only one tier of berths for a ward of isolation or to accommodate more serious cases. The vessel can comfortably accommodate three hundred and thirty sick or wounded men, with sufficient berthing space for the crew of the vessel. There are quarters for four medical men, two apothecaries, and twelve nurses. . . . Near the center of the ship on the berth deck is the operating room, eighteen by twenty-one feet. It is well lighted by a large skylight and by air ports above the deck. . . . As soon as the action is over, a launch should tow its barge alongside a vessel that has been in action, the wounded should be hoisted out and into the barge, and it should then steam away with all dispatch to the ambulance ship, unload its human freight, and speed away again on its mission of humanity."

The naval authorities have, it is announced, decided to act on this suggestion, and have purchased the Cromwell liner Creole, which is being as quickly as possible converted into a floating hospital in the Newport News shipyard. This vessel is intended to accompany the North Atlantic squadron now off Key West, and her speed will enable her to keep up with the fleet.

"VIVOS voco, mortuos plango." The great bell from which Schiller took his motto for the "Lied von der Glocke" will shortly belong to the voices of the past, says The Pall Mall Gazette. This is the bell of the Münster, at Schaffhausen. It was cast at Bâle in 1486, though in this century the families and guilds which supplied the great belfries of Europe were at Nuremberg, Augsburg, and in Holland, while the Klinge or Klinghe family in Northwest Germany gave their name to the domestic bell wherever the German language is spoken. The Glocke von Schaffhausen was originally a passing bell, and it has tolled its own passing for more than a century. A piece of the metal broke away more than a hundred years ago, and a new and dangerous crack was revealed last year. For the sake of its historic past it was treated with all possible care. It was covered up in winter and its voice was heard only on Sunday in summer. Now it is to be melted with the four other bells of the minster, and a new peal will take its place. Another historic bell in Switzerland is the silver bell in the minster at Berne. It rang "for the service of God, the festivals of state and the execution of the evildoer." When the forces of the young French republic captured Berne in 1798, the citizens painted it a funereal black, and under this disguise it escaped from the rapacity of the Gaul.

A By-product of Iron Making.

BY WILLIAM GILBERT IRWIN.

One of the most important recent products of this inventive age is the discovery of a method for the utilization of iron slag which has recently been made by a Chicago iron worker. The product of the new discovery is called carbolite. It is a combination of carbon, calcium, aluminum and silicon, and from it is produced ethylene gas, which is a great improvement over acetylene. It is now generally believed that the manufacture of carbolite, which is to be begun in a very short time, will revolutionize the manufacture of iron. The reduction of the slag into carbolite reduced the waste iron to the state of a by-product, from which ethylene gas can be produced at a cost 50 per cent under the cost of acetylene, and for all purposes the former is greatly superior.

The waste in the processes of iron manufacturing is enormous. For every ton of pig iron produced no less than 13,000 pounds of substance goes to waste. Using an ore containing 50 per cent of metallic iron, the waste and production would be about as follows:

Consumption.	Production.
4,000 pounds iron ore.	2,000 pounds pig iron.
1,100 " limestone.	1,500 " slag.
8,500 " air.	12,100 " gas.
15,600 "	15,600 "

For every ton of pig iron obtained there is a waste in slag of three-quarters of a ton. This is not only a waste product, but its removal from the blast furnace is expensive, and this greatly increases the cost of producing the pig iron. While this slag product has in some cases been used to adulterate the cheaper grades of cement and to manufacture mineral wool, its use has as yet been exceedingly limited. Its principal use has been as railroad ballast and in steel working, but the income from these sources has scarcely justified the handling of the material.

In the newly discovered fuel process this slag is combined with carbonaceous material, such as coke, and thus the new product is obtained. In bringing carbolite into contact with water or other liquid, a gas is instantly generated which, when used in suitable burners, gives a beautiful white flame of great steadiness and remarkable luminosity. The processes of the production of this new fuel product are as follows: Slag being a combination of all the non-volatile substances contained in the charge except iron, and being lighter than smelted iron, floats on the top and is drawn off through an aperture in the furnace, placed at the upper line of the molten iron, into suitable receivers, so constructed as to contain a very great amount of heat. Being at a very high temperature, it is almost as fluid as water, and by means of great ladles, operated by hydraulic power, is passed from receivers into converters, similar to those used for the manufacture of Bessemer steel. Except that their tops are somewhat closed, the opening being much smaller than their central diameter, these converters may be likened to great elongated iron kettles, hung on iron shafts or trunnions leading to and connecting with a number of small tubes which perforate the bottom of the converter. These pipes are so arranged that finely crushed coke can be fed into and forced through them.

Before the slag is poured into the converter, a strong gas blast is forced through the pipes to keep the molten mass from running into and filling them up. As soon, however, as the slag is poured into the converter, the pulverized coke is fed into the pipes, and by the blast is carried through and forced into the molten mass. This is continued until the mass is thoroughly impregnated with coke. To insure a uniform mixture, the converter is tipped backward and forward as desired, thus increasing the agitation, and when the mixture is complete, the converter is turned on the shaft so as to cause the mass to flow between the series of carbon fans or electrodes, which serve to introduce a powerful electric current. Coke being an excellent conductor of electricity, while the slag is a resistant, the result is that the particles of slag, in connection with the particles of coke, form innumerable miniature electric arcs, producing an immense heat within the mixture. In the course of about twenty minutes the mass becomes so superheated that the slag is deoxidized and becomes fused with the coke. When this fusion is effected, the material is finished. It is then poured into moulds of any desired size or shape, and when cooled it is of a crystalline formation and has a metallic glitter. It is nearly twice as heavy as coal.

This product can be kept independently or transported without difficulty. Protected by wood-jacketed tin cans from water and air moisture, it can be kept as a common article of merchandise and supplied to the consumer with much less difficulty than ordinary illuminating oil. Each pound of good carbolite will produce five cubic feet of gas, and each cubic foot is equal to fifteen feet of ordinary coal or water gas. By a little calculation it will be readily seen that at $50 per ton, or 2½ cents per pound, 35 cents worth will produce as much light as one thousand feet of ordinary gas costing $1. The same amount of light produced by the 16 candle power electric lamps, at one cent per hour, would cost $2.

Carbolite is simple and inexpensive, and it is equally adapted to use in isolated places or to supply the largest cities. For individual use generators are built which operate automatically. When the lights are burning, the machine makes gas; when they are out, the machine and the consumption of carbolite stops. The generators are simple and inexpensive. Any ordinary person may operate and afford one. For automatic town plants the cost is many times less than those now in general use. The cost of piping is less and the maintenance of the plant is nominal. It is equally practicable to light individual blocks or buildings.

The construction of a carbolite plant is almost identical with that of the Bessemer portion of a steel plant. The converters handle three or more tons at a single charge. The production of carbolite under the most favorable circumstances will be in connection with the manufacture of pig iron or coke. In a combined plant not only can the slag of the blast furnace be utilized and made valuable, but the immense value of gases from the furnaces, converters and coke ovens, together with the now wasted sensible heat, could all be transformed into mechanical energy ample to provide power for all requirements without the expenditure of a penny for fuel.

It is estimated that a 150-ton a day carbolite plant will cost $150,000. The cost of operating the plant and producing the carbolite is estimated at $1.75 per ton. But placing the cost of the product at $10 per ton, and crediting to the blast furnace $8.25 of this amount for slag, waste gases and heat, the product is remarkably cheap. The annual output of such a plant would be 45,000 tons, and at this rate this product would represent a value of $450,000. The cost of packing the product, office expenses and depreciation of the plant could not exceed $150,000, which would leave a net profit of $300,000 annually. Through the adoption of this new process, which utilizes the waste products of iron manufacturing, the cost of pig iron will be reduced fully one-half. Based on the output of iron for 1897—being nearly 10,000,000 tons—it would mean a saving of upward of $40,000,000. The use of carbolite gas for heat and power purposes is unlimited, and this new product is almost certain to revolutionize many important manufacturing industries.

From the new product either heat or power can be produced at one-tenth the present cost. Alcohol or ether can be thus produced in quantity, and in the processes carbonic gas is obtained. The most modern use of the latter is in extinguishing fires on shipboard. It is produced in such quantities that it is confined in pipes, and, under pressure, it could easily be conveyed through buildings for fire-extinguishing purposes. It could likewise be used for refrigeration, and would thus do away with ice boxes. Houses could be cooled in the same way in which they are heated with steam. This latest product of electro-chemistry and electro-metallurgy, which is really a process for the utilization of the by-products of iron making, is destined to work wonders, and the near future is certain to see its further exploitation and development.

The New Transatlantic Mail Steamer "Kaiser Friedrich."

With the arrival at New York last week of the "Kaiser Friedrich," the latest addition to the magnificent fleet of the North German Lloyd Steamship Company, one more of the remarkable vessels which have made the transatlantic service the most distinguished in the world commences her active service between the new and the old world.

She is in many respects a sister ship of the "Kaiser Wilhelm der Grosse," which was fully illustrated and described in these columns at the time of her maiden voyage. (See SCIENTIFIC AMERICAN of June 19, 1897, and October 9, 1897.)

The new ship has a gross tonnage of 12,000 tons, with displacement of 17,000 tons on a draught of 28 feet. She is 600 feet long, or 49 feet less than the "Kaiser Wilhelm," 64 feet in beam, and 41 feet in moulded depth. Both the ships and the engines were built at the yard of Mr. F. Schichau, at Elbing. The engines are of the quadruple expansion type and consist of five cylinders acting on three cranks. High pressure cylinders are 43¼ inches in diameter, the intermediates 64¼ and 92⅛ inches respectively, and the two low pressure cylinders are each 93¼ inches in diameter. The indicated horse power is 25,000. The bronze propellers are three-bladed and 20 feet 4 inches in diameter. Nickel steel is used for the cranks and propeller shaft. With a view to reducing vibration, and incidentally assisting in the trimming of the vessel, the engines are located amidships, and not, as is usual in an ocean liner, in the after part of the vessel. As a result of this arrangement, it has been necessary to place one of the boiler compartments aft of the engine room. Steam is supplied by nine cylindrical double-ended boilers and one single-ended boiler, the whole being arranged in three groups, each in a separate watertight compartment. The total heating surface is 73,000 square feet. The working pressure is 225 pounds to the square inch, and Howden's system of forced draught is employed. As to the all-important question of speed, although the new ship did not distinguish herself from her maiden trip, falling considerably below the record of the "Kaiser Wilhelm," it is expected when her engines are settled down to work she will reduce existing records for the transatlantic trip about half a dozen hours. Some promise of this is given by the fact that on the run from Bremerhaven to Southampton she maintained an average speed of 21½ knots per hour.

Valuable Hints to Manufacturers and Exporters.

Commercial missions must bring large results to nations who take intelligent methods to ascertain the needs of the world's markets and adjust their manufactures to the demands of distant peoples. Our chambers of commerce, says the English Consular Journal, might have been much more active in this respect, and it is unfortunate for British trade that their inaction has not been shared by chambers in other countries. In order that we may enlarge our foreign trade, it is of the first importance that our manufacturers should know not only what suits British tastes and prejudices, but what our customers like and will have. Closely allied to the previous grounds of the success of foreign producers is the question of packing, as to which there is a general consensus of opinion that our foreign competitors, and in particular perhaps the United States, take much more trouble than we do. The following instance was recently cited: Hong-Kong—Candles. British makers absolutely decline to alter their system of packing to that adopted by Continental markets; consequently, they have lost the whole trade. The personal factors which enter into successful competition must not be ignored. It is important that our manufacturers of textile fabrics should know what are the desires or prejudices of purchasers in the different markets of the world, as regards quality, weight, sizing, dressing and the finish which will often sell low-priced goods; preferred lengths and widths; and the manner of putting up and packing, freight charges, etc. An unfortunate trade mark will often doom an otherwise desirable product to failure. This is particularly true in China.

Mr. Gardner, the British consul at Amoy, reporting on this subject last autumn, said: "It has not unfrequently occurred that the sale of foreign goods has been greatly crippled by having some label placed upon it that was offensive to Chinese superstition or tastes. Many colors have peculiar recognition by the people; some offend their tastes and others their superstitions. Some are all right on some kinds of goods and all wrong on others. The Chinese will often buy biscuits, needles, thread, matches, soap, medicine, scent, sweets, etc., for the sake of getting a lucky label. Some colors and combinations of colors are to the Chinese unlucky." Mr. Gardner at the same time furnished us with some four hundred designs for trade marks and labels which, in his judgment, would be popular with the Chinese people. Many of these designs we have already discussed, and we are now in receipt of further important particulars from a consul in China.

It must be remembered that Chinese art is very peculiar, and a tiger as ordinarily represented by foreign artists would not meet with favor with these people. It must be a tiger according to Chinese imagination and art, of unreasonable length of body or bigness of head or curve of tail, and impossible attitudes. On a popular Japanese match box is displayed a monkey standing on its front feet, head nearly touching the ground, with hind feet up in the air, and tail whipping the skies. The grotesque, and even hideous to the British mind, tickles the fancy of the dwellers in Far Cathay. No description can supply adequate information to an engraver or colorer by which he could produce the real thing, and any departure from the Chinese fancy in such things would brand the goods at once as the product of a "foreign devil," and doom it to defeat. A Chinese dragon differs from a Japanese dragon in its contortions. A royal dragon must have five claws, while the plebeian beast has only four. A stork must always stand on one leg, or, flying, must present an enormous spread of wings and trailing long legs. All Japanese birds, when flying, must have a tendency downward, never up or on a straight course. To a Japanese nothing is preferable to the representation of snow-capped, sacred Fusiyama, as seen on nearly all Japanese fans, screens, etc.

Statistics as to Bombardments.

The editor of Le Journal des Débats, of Paris, has collected some official statistics to prove that a bombardment is not such a terrible thing after all. In 1870–71 the bombardment of Belfort lasted seventy-three days, during which 99,453 projectiles fell within the city and there were but sixty victims killed or fatally wounded. At Strasburg, during the siege of thirty-eight days, the Germans fired upon the city, mostly at close range, 193,722 shells, with a record of only 300 victims. Finally, at Paris, where the bombardment lasted only twenty-three days, 10,000 siege shells were thrown, killing and wounding 107 persons.