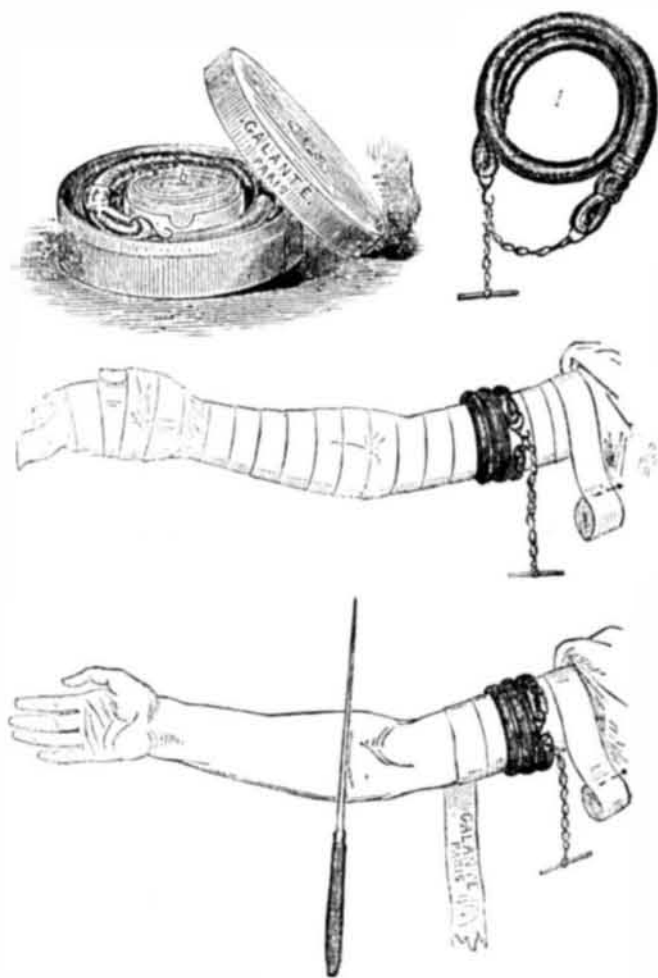


BLOODLESS SURGERY.

We have already briefly alluded to the Esmarch process for performing surgical operations without provoking the usual hæmorrhage. The annexed engraving, extracted from *Les Mondes*, represents the devices used in connection therewith by the inventor. These consist in an elastic bandage, measuring 26 feet in length by 18 inches in breadth, and a tube or cone of strong vulcanized rubber, having a hook at one end and a chain and bar at the other.



The application of the apparatus is very simple. Supposing that an arm is to be amputated, the bandage is tightly wound around the member from the extremities of the fingers up to a little above the point at which the division is to be made. By this uniform compression, the blood is forced back and out of the vessels. At the upper limit of the bandage, the rubber end is passed three or four times around the arm as closely as possible, and fastened in place by the hook and chain, thus preventing the return of the circulation to the member after the bandage is unwound. The latter, on being removed, leaves the arm white and free from blood and hence ready for the operation, which is accomplished with a very trivial effusion.

A Specimen Book Catalogue.

Mr. E. Steiger, of 22 Frankfort street, New York city, has circulated a specimen of a proposed catalogue of the whole American literature, and desires the opinion of the press on the system. A work, similar in its object but far less complete in its details and not so well arranged, is used in England, and is found especially valuable to librarians and readers as well as to the publishing trade. When we state that the specimen pages now before us give the titles of books and names of authors in full, the dates of the editions, number of pages, size, binding, price, and publisher's name of each volume, our readers will understand the thoroughness of the scheme, and will believe the author when he says that the undertaking is not remunerative.

A Public Benefactor.

The splendid charities of Peter Cooper and George Peabody have been overshadowed in extent, though not in spirit, by the extraordinary munificence of Mr. James Lick, of San Francisco. This gentleman, the possessor of enormous wealth, has recently, in a single instrument, deeded away the sum of two million dollars for the establishment of institutions for the public benefit, preferring to superintend the disposition of his fortune and enjoy the fruits of his beneficence during his lifetime, rather than to follow the usual course of bestowing his bounty by will. The deed, which is a lengthy document, containing some eighteen articles, is dated the 2d of June, 1874, and conveys to seven trustees, for a nominal consideration, an immense amount of property, which they are instructed to sell. Out of the sum obtained, \$700,000 is set aside for the placing on land, on the borders of Lake Tahoe, Placer county, Cal., "a telescope superior to and more powerful than any telescope ever yet made, with all the machinery appertaining thereto." If the above site is found to be unsuitable, provision is made for the selection of a more appropriate locality. The announcement of Mr. Lick's intention thus to provide for the "million dollar telescope" appeared in our columns, it will be remembered, some months ago, and with the delivery of the present deed, the practical establishment of the great observatory—the greatest the world has ever seen—begins.

After this donation, which commences the series, follow gifts of \$25,000 in gold to the Protestant Orphan Asylum of San Francisco; \$25,000 to a similar institution of San José,

Cal.; a like sum to the Ladies' Protection and Relief Society of San Francisco; \$10,000 to the Mechanics' Library Association, \$10,000 to the Society for the Prevention of Cruelty to Animals, both of same city; \$5,000 for a monument for the donor's mother, and a like amount for memorials of two other relatives; \$100,000 for an Old Ladies' Home; \$150,000 for public baths, \$150,000 for a statue of Francis Scott Key, author of the song of the "Star Spangled Banner"; and \$250,000 for a statue illustrating the progress of the State of California in education, mechanical arts, and mining, for designs for which sums of \$10,000 and \$5,000 are offered. \$300,000 is devoted to the foundation of the "California School of Mechanical Arts," for the education of both sexes "in the practical arts of life, and in whatever industry to which mechanical skill now is or can hereafter be applied."

The residue of the proceeds is divided between the California Academy of Sciences and the Society of California Pioneers, to be expended for buildings, library, apparatus, etc. The donor provides for all his living relatives and reserves a handsome income for himself.

Mr. Lick is the son of a farmer and was born in the town of Lebanon, Pa. His early life was spent working on the farm. While quite a young man, he went to South America and there became a large cattle raiser, supplying horses to the Governments of Brazil and Buenos Ayres. At the breaking out of the gold excitement in California in 1849, Mr. Lick was in business in Valparaiso; but turning over his affairs to a friend, he took \$20,000 in doubloons and started for the new country. With great sagacity he immediately invested his funds in real estate in San Francisco, holding fast to his bargains, and building slowly and carefully. The rapid rise in value of his property resulted in immense profits, out of which he erected the Lick House in San Francisco, one of the finest hotels in the world. It is a portion of the colossal fortune, thus made, which Mr. Lick has devoted to the uses above detailed, thus placing himself in the front rank of philanthropists.

A Lecture Experiment with Potassium.

To show the green color of gaseous potassium, it is volatilized in wide horizontal tubes through which hydrogen passes, which becomes spontaneously inflammable, and burns with a brilliant violet flame, while the hot part of the tube becomes filled with green vapor, condensing in the colder parts as a mirror. When the experiment is finished and air gradually admitted, the potassium is first oxidized to the blue quadrant-oxide.

FEATHERING ARROW HEADS.

Our engraving shows an arrow head from the collection of L. G. Olmstead, LL D., of Fort Edward, N. Y., found near Peoria, Ill. It is believed to be unique, not existing in any other collection in this country or Europe. Its peculiarity



consists in the beveled edges, as shown in our illustration, which give rotation to the arrow when it flies through the air, thus improving the accuracy of the missile. This is believed to be the earliest example of the feathering projectile extant.

Correspondence.

Explosion of the Fireless Locomotive.

To the Editor of the Scientific American:

The New York and Brooklyn papers recently gave the history of the Thermo-Specific Motor Company's new engine, which has just been built at the Grant Locomotive Works at Paterson, N. J. This engine was brought to the South Ferry, Brooklyn, and thence taken to East New York. On May 22 a large party of editors and reporters were invited to attend the trial trip. The engine was filled with boiling water

within 9 inches of the top, and steam was raised to a heat of 380° Fah., with the following results:

"An explosion, which might have resulted disastrously, occurred yesterday afternoon at East New York. One of the new engines which it is proposed to introduce on Atlantic avenue was hauled out for inspection and testing. The engines are built on a novel principle, having no generating boiler, but taking steam from a "service tank" at the end of the road. The engine drew up to the tank, and was in course of obtaining its supply of steam, when an explosion occurred which threw the tank nearly a hundred yards up the track, the lid being blown about fifty feet further and broken to pieces.

Several of the bystanders had very narrow escapes, but, fortunately, nobody was injured; everybody was badly scared, and the excitement in the village was intense for some time."

None of the reporters present published an account in any paper. This account was obtained by a reporter of *The Argus* meeting a person who saw the explosion. The debris was immediately cleaned off, as I am informed, and a visit to the officers of the company gave the reporter no farther information. I have not as yet heard of any investigation. Is it possible that the press can be so quieted, and that a new steam boiler, with steam at 380° pounds pressure, can explode the first time it is used, and no investigations be made? If I recollect rightly, your paper, in about March or April, 1873, published a full account of the thermo-specific that was to supersede horses on the street cars. I hope the opportunity will not be lost, and that a full and impartial investigation will be made.

EDWIN BAKER.

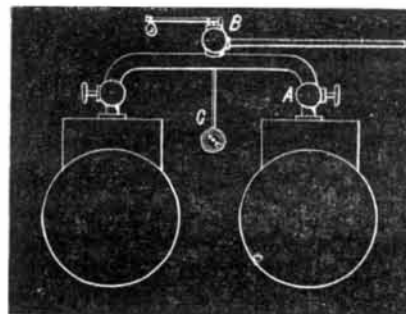
240 Atlantic avenue, Brooklyn.

Boiler Explosion near Geddes, N. Y.

To the Editor of the Scientific American:

A disastrous boiler explosion occurred this morning at Ashton Mills, Geddes, N. Y., killing two men outright, and two more are not expected to live. How many more are injured I have, as yet, been unable to ascertain. Some men here are making or attempting to make a mystery of the affair; others are trying to find fault with the boiler, the engineer making the statement usual in such cases, namely, plenty of water, not much steam, explosion incomprehensible, etc.

The cause will be obvious to you, in view of the idiotic manner in which the connections between the exploded boiler and its mate were made, which the engraving will explain. A is the globe valve, of which there was one to each boiler, B the safety valve, and C the pressure gage.



The boilers were both run together by day, and only one at night, the latter being shut off by its globe valve, A, which, it will be seen, shut it off both from the safety valve, B, and the steam gage, C, it being left to the night watchman to open it and fire up the boiler in the morning. Neglect to open that valve is the unmistakable cause of the disaster, as it is of many others which have happened to boilers so connected. That it could have been no fault of the boiler is certain, as it is not broken in any place by the steam. But the heads are forced out, by a gradually increasing pressure, until the sheet left the tubes, when the reaction of issuing steam caused the boiler to fly end over end, doing great damage. In my opinion the excellence of the boiler is manifest by its condition.

OPERA MUNDI.

Syracuse, N. Y.

Bullets Impacted in the Air.

To the Editor of the Scientific American:

Having seen a statement in one of your city papers that a wonderful curiosity, in the shape of a rebel and a Union bul-



let impacted in the air, was soon to be placed in the Museum of the Ordnance Department, at Washington, I inclose you a bullet which I found on the rebel earthworks in front of Petersburg, on the Sabbath after the surrender of that city. Peckskill, N. Y.

H. ANDERSON.

CHROMIC ACID SOLUTION FOR BATTERIES—An improved cirépe, by which a stronger current is produced, is as follows: 12 parts by weight potassium bichromate in 150 parts water, with addition of 25 parts of sulphuric hydrate.

*Our correspondent contributes nearly 160° Fah., as previously mentioned which would be about 160 pounds pressure.—Eps.