

FOR FIGHTING FIRES.

EVOLUTION OF THE MODERN STEAM ENGINE.

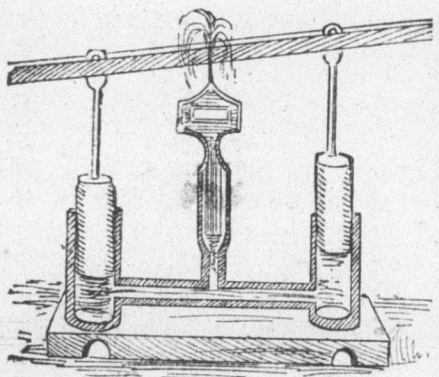
A Quaint English Concern, and an Antique German Contrivance that Worked on Rockers Like a Cradle—Screwing Water Through a Squirt.

Some Very Early Devices. Probably no other natural force or element has caused more destruction than fire. Although various extinguishing agents are, and have been, used, water has always been and will continue for some time to be the principal, simplest and most easily applicable cure for a conflagration of any magnitude.

Among the earliest apparatus for applying water to fires was a large squirt, or syringe, consisting of a tube, filled with water from a tub, which was rapidly ejected by means of a plunger operated by hand. This, in various forms, continued in use for a long time. What is, perhaps, the oldest known fire engine for pumping water is mentioned in the Spirituaria of Hero, about 150 B. C. From the description there given this engine had two single-acting pumps, the plungers of which were worked by a single beam, pivoted between the two. The streams united in a single discharge pipe, passing up a trunk in which was an air chamber, and out at a nozzle which could be turned in any direction. This description might stand for a great many forms of hand fire engines used even to the present day.

Something like the more modern fire engine appears to have been brought out in the sixteenth century, and is described as a "water syringe." This was mounted on wheels and was worked by levers. Fire engines of this kind were apparently much used in Germany. In England, during the latter part of the sixteenth century, large brass syringes were employed, holding several quarts of water, and operated by three men, two holding the syringe at each side with one hand and directing the nozzle with the other, and the third operating the plunger. After having discharged the water, the syringe was refilled from a cistern or a well near the fire, or from buckets. Later these water squirts were fitted to portable cisterns or tanks.

The First Engine. In the latter part of the seventeenth century a portable fire engine, with a double cylinder pump, mounted on a

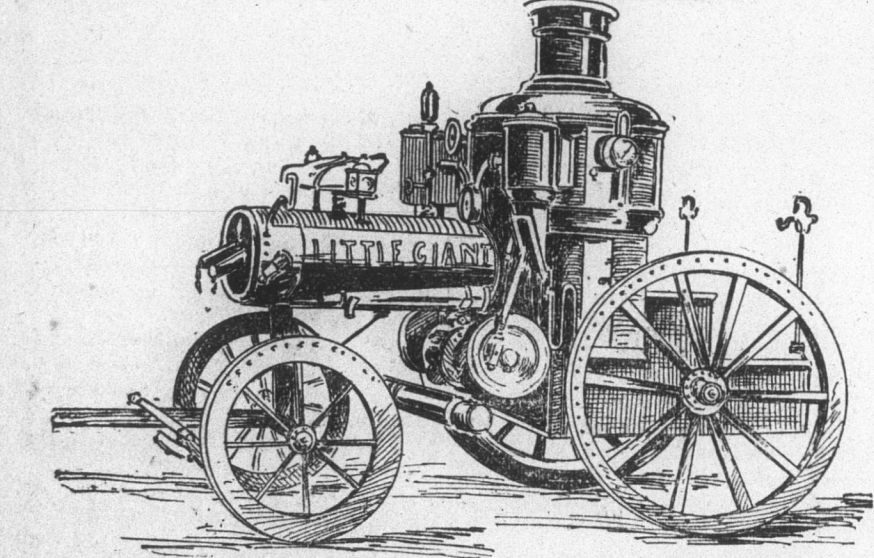


OLDEST KNOWN FIRE ENGINE.

cistern or tank, from which water was drawn, was introduced in England by Newsham. This engine was, in many respects, similar to the modern hand fire engine, and continued in use in England up to 1832. The improved Newsham engine was operated by side rods, and for the portable cistern a suction pipe was eventually substituted. Single cylinder portable fire pumps were also used in France and Germany about this time.

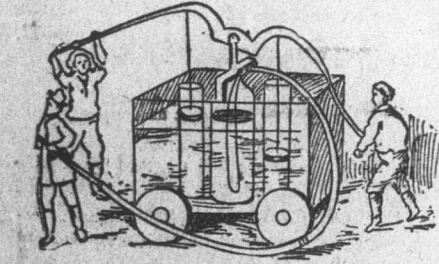
The Newsham engine was, perhaps, the first successful fire engine, and really was the pioneer of the modern, manually operated engine. The pumps were of various sizes and designs, and were, in most cases, operated by levers. Various forms of engines, similar to the Newsham engine, continued in use as late as 1850. Even to-day hand engines are employed to quite some extent in the smaller towns and villages.

Stationary steam fire pumps were in use long before the portable steam fire engine made its appearance. About



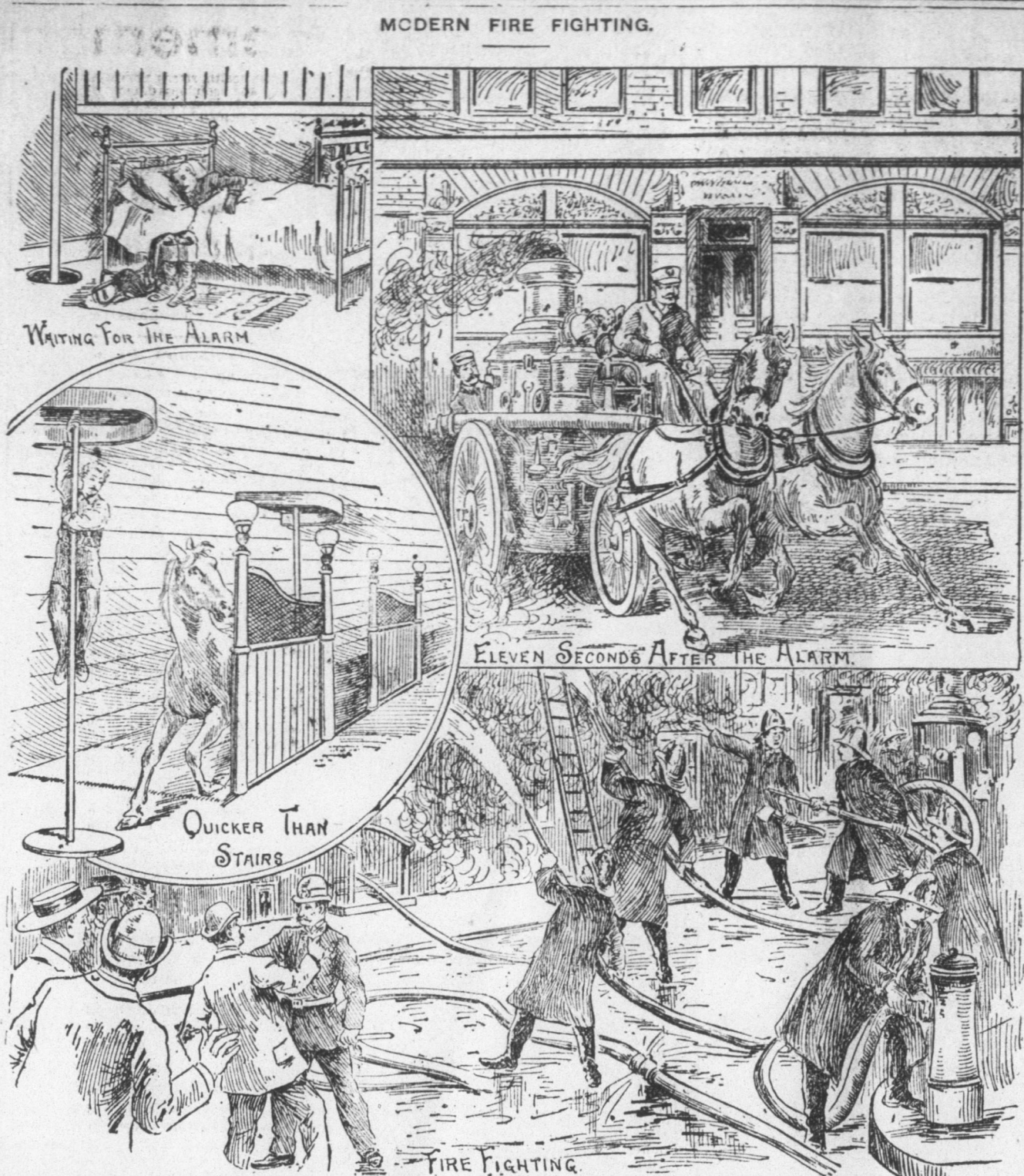
THE FIRST ENGINE TO RESPOND AT CHICAGO'S BIG FIRE.

1830 the firm of Braithwaite & Ericsson, of London, brought out a steam fire engine of about six horse power,



EARLY ENGLISH FIRE ENGINE.

capable of throwing 150 gallons of water per minute a distance of 80 or 90 feet. It was drawn by horses. A similar engine of larger capacity was built in New York by Captain Ericsson in 1843. The first steam fire engine operated in the United States, however, was built by P. R. Hodge, at New York. This engine was self-propelling, and the boiler, engine and pumps were placed horizontally. When it was necessary to operate the pumps, the driving wheels were raised clear of the ground, as the same engine was used for driving and pumping. This engine was operated at the expense of the insurance company, but continually met with opposition from the volunteer firemen. Finally, when playing at a fire in Dover street, the machine did such ex-



cellent work that the firemen utterly refused to allow it to be used thereafter, and it was stored away and New York's fire protection was again limited to the old hand tubs.

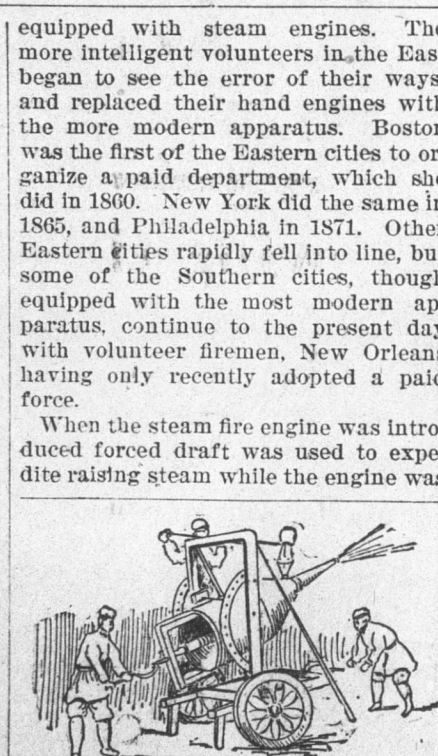
First Paid Fire Company. In 1852 a Cincinnati company placed a steam boiler and cylinder in connection with the pumps of a hand engine belonging to the Cincinnati department and mounted the whole contrivance on wheels and a frame. A public trial was made of this crude affair, and it worked very successfully. In the short time of four minutes and ten seconds steam was raised from cold water, the engine started and water discharged through 350 feet of hose to a distance of 130 feet from the nozzle. Although this exhibition was naturally looked upon with dislike by the volunteer firemen, the city government was greatly pleased and immediately contracted with the makers for a complete steam fire engine. This was built and put in service with a company organized and supported by the city. Thus the first paid fire company in the world to operate by steam power was brought into existence.

The fame of the Cincinnati engines spread and other cities endeavored to introduce the system, always meeting with the most violent opposition from the volunteers. But the steam fire engine was bound to come and was advocated by the press. Chicago and other Western cities closely followed Cincinnati by organizing paid departments

GERMAN FIRE PUMP OF 1816.

equipped with steam engines. The more intelligent volunteers in the East began to see the error of their ways, and replaced their hand engines with the more modern apparatus. Boston was the first of the Eastern cities to organize a paid department, which she did in 1800. New York did the same in 1865, and Philadelphia in 1871. Other Eastern cities rapidly fell into line, but some of the Southern cities, though equipped with the most modern apparatus, continue to the present day with volunteer firemen. New Orleans having only recently adopted a paid force.

When the steam fire engine was introduced forced draft was used to expedite raising steam while the engine was going to a fire. This was later supplanted by gas burners, located in the furnace, which were continuously burning while the engine was at the engine

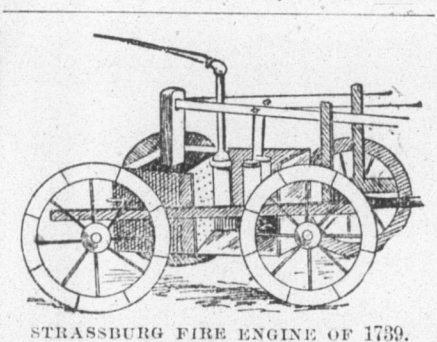


ENGLISH FIRE SQUIRT OF 1668.

house, thus keeping the water in the boiler at a fair heat so that steam could be quickly raised after the fire had been started and while the engine was on its way to the scene of action. Both of these plans have been done away with in most well regulated fire departments. A stationary steam boiler

MODERN FIRE FIGHTING.

house, thus keeping the water in the boiler at a fair heat so that steam could be quickly raised after the fire had been started and while the engine was on its way to the scene of action. Both of these plans have been done away with in most well regulated fire departments. A stationary steam boiler



STRASSBURG FIRE ENGINE OF 1739.

at the engine house is now generally connected with the boiler of the engine, and keeps the water in this hot, so that steam sufficient for pumping can be raised in from three to ten minutes after the fires are lighted and while the engine is running to the fire. All the engines are supplied with the necessary flexible suction pipe to connect the pumps to the water plugs, but the discharge hose is, in most cases, carried by a separate tender or horse carriage. The larger engines have a capacity of from 800 to 1,000 gallons of water per minute, discharging through from two to four outlets, the discharge hose being generally fitted with 1 1/2 to 1 3/4 inch nozzles. Some extra large engines have a capacity even beyond this. The weight of these engines varies from 6,500 to 7,500 pounds, and they are generally from 22 to 25 feet long, from 8 to 9 1/2 feet high, and about 6 feet wide. The piston speed varies from 200 feet to 300 feet per minute. The boilers have a large heating surface, and generally from 22 to 25 feet long, from 8 to 10 feet high, and about 6 feet wide. In the modern steam fire engine it is safe to say that from three to four times as much coal is burned under the boiler per indicated horse power as would be consumed by a good, everyday stationary steam plant of similar capacity, say from 50 to 100 horse power. However, the steam fire engine is built for speed and rapid duty, and not for economy.

GRAY WITH TIME.

An Ancient Obelisk that Stands on the Banks of the Nile.

The oldest of all the obelisks which stands alone among the green fields on the banks of the Nile not far from Cairo. It is the gravestone of a great city which has vanished and left only this relic behind. That city was the Beth-shemesh of scripture, the famous On, which is memorable to all Bible readers as the residence of the priest of On, Poti-pherah, whose daughter Asenath Joseph married. The Greeks called it Heliopolis, the city of the sun, because there the worship of the sun had its chief center and its most sacred shrine. It was the seat of the most ancient university in the world, to which youthful students came from all parts of the world to learn the occult wisdom which the priests of On alone could teach.

Thales, Solon, Eudoxus, Pythagoras and Plato all studied there; perhaps Moses, too. It was also the birthplace of the sacred literature of Egypt, where were written on papyrus leaves the original chapters of the oldest book in the world, generally known as "The Book of the Dead," giving a most striking account of the conflicts and triumphs of the life after death, a whole copy of fragments of which every Egyptian, rich or poor, wished to have buried with him in his coffin, and portions of which are found inscribed on every mummy case and on the walls of every tomb. In front of one of the principal temples of the sun in this magnificent city stood, along with a companion, long since destroyed, the solitary obelisk which we now behold on the spot. It alone has survived the wreck of all the glory of the place. It was constructed by Useresen I., who is supposed to have reigned 2,800 years B. C., and has outlived all the dynastic changes of the land, and still stands where it originally stood nearly forty-seven centuries ago. What appears of its shaft above ground is 68 feet in height, but its base is buried in the

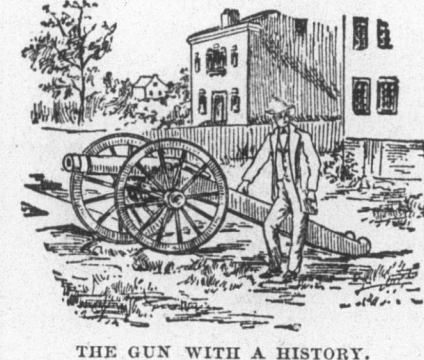
mud of the Nile, and year after year the inundation of the river deposits its film of soil around its foot, and buries it still deeper in its sacred grave.—Pall Mall Gazette.

GUN WITH A HISTORY.

Old Cannon that Protected a Missouri Town from Invasion. The accompanying cuts display two objects that are particularly prized by the residents of Hermann, Mo. The old cannon is the one used during the civil war to protect the town from invasion, and the building is that of the Volksblatt, one of the oldest German papers in the State.

By an act of Legislature in 1866 the cannon was presented to the town of Hermann to commemorate the occasion, when fourteen enthusiastic and patriotic citizens held Marmaduke and his entire company at bay for several hours, impeding his progress to Jefferson City, and virtually frustrated the attempt of the Confederates to capture the capital.

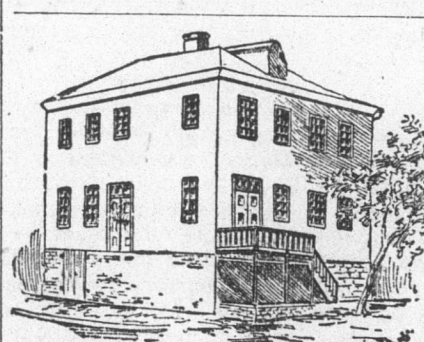
When the story of the approaching



THE GUN WITH A HISTORY.

enemy reached Hermann the cannon was soon got in readiness to do its best, and was kept booming frequently enough to at least retard the progress of the boys in gray. It is little wonder that the citizens hold this old piece of iron as something to be prized, for human life and safety are not things so lightly regarded that one can look upon their old-time preserver with a feeling of nothing but indifference, and, although the old cannon has been a long time silent, the days when it took an active part in Hermann's affairs are still remembered. And, although it is now a useless bit of property, still it marks an event, and is accordingly prized.

The old printing-house, too, saw its share of struggles at the same time the



VOLKSBLATT PRINTING OFFICE IN 1849.

historical cannon was sending forth its deadly missiles. When Generals Price and Marmaduke invaded Hermann and its surrounding territory all the types and the old Washington hand press, then in possession of the Volksblatt, were buried and resurrected as soon as the enemy decamped, and publication of the paper was promptly resumed. The Volksblatt was founded by Muehl and Streibly in 1847, making it now close on to half a century old.

Cubans Take Another Tack. "I see," said Woody White's patient wife, "that the Cuban insurgents have decided to take another tack." "Have they?" was the response, with a self-satisfied titter. "That'll make it harder than ever for Spain to sit down on them, won't it?"—Washington Star.

A National Scandal. There have been 257 murders committed in the Indian Territory since the adjournment of Congress. Its government has become a national scandal.—Springfield Republican.

"Why do they keep on saying that 'The villain still pursued her'?" "You see, he was a Philadelphia villain and has never caught up."—Truth.

A PAIR OF TWINS.

Eccentricities of Maiden Ladies Who Amused an Eastern Town.

The curious streak of obstinacy which crops out in many New England families, especially in small places, where the range of ideas and occupations is small, has been brought into prominence through the tales of a gifted group of story writers, notably by Miss Mary E. Wilkins. People living in other parts of the country often think her stories must be exaggerations, but dwellers in New England towns can parallel most of them from their own knowledge.

In one Massachusetts village there dwelt not many years ago two maiden ladies, called, though they were over forty years of age, "the Hatfield girls." Beside this youthful appellation, they retained a youthful taste for gay colors. As they were twins, very tall, very lean, always wearing skirts conspicuously short to avoid dust, and hat brims unusually wide to avoid injuring their eyes, they would have been rather remarkable figures even if they had not chosen to dress, school girl fashion, in clothes exactly alike to the slightest detail.

They were always together, and it was one of the characteristic sights of the village to see the Hatfield girls plodding through the snow to the post-office in their green-and-red plaid gowns, black-braided coats and big, brown, fuzzy felt hats with great green bows. Their muffs, mittens, tip-tyes, wristers, barge bells, even their rubber boots, were duplicates of each other. In fact the sisters were as absolutely alike as the twin paper dolls which little girls cut from a piece of paper folded double.

In summer it was the same. They floated by to church in duplicate blue muslins, or watered their flower beds in the early morning in indistinguishable hideous purple wrappers.

Suddenly, the village was stirred by an exciting event; the Hatfield girls had quarreled! They quarreled because Mary Abby, who overheard a small boy making jokes at their expense, suggested to Ann Eliza that perhaps it would be as well if henceforth they dressed just a little differently. Ann Eliza received the suggestion as the crudest of insults; but she said hotly that, after that, she wouldn't for a kingdom wear a dress off the same piece as Mary Abby's.

Sure enough, the sisters ceased to dress alike. Furthermore, they did not dress harmoniously. They were together as much as ever—but if Mary Abby wore pink, Ann Eliza had on scarlet; if she wore green, Ann Eliza wore blue; if it were yellow, she decked herself in magenta; if it were brown or gray, she tried to get a shade of the same color that would make her sister's appearing dingy and faded.

It was a war of colors waged furiously for a week, bitterly for a month, spitefully for a year; then perseveringly, resolutely, obstinately, for one—two—three—four—five years; from five to ten; ten to twelve; twelve to thirteen.

Neither sister would give in, for after a brief exhibition of colors Mary Abby had tried to fight her off with twin with her own weapons, and to array herself in hues too violent to be overwhelmed. They were as gay as parakeets, the two poor bitter old twins, and the interested village had quite given up expectation of a change, when at length a change came.

One morning the "Hatfield girls," side by side, and dressed in new and glossy black, entered the postoffice amid a crowd of staring villagers, and called for their mail. They were in mourning evidently—but nobody could think who had died. At length the postmistress ventured to inquire.

"Yes," said Ann Eliza, sobbing, smoothing down her new cape, "we are in mourning. It wasn't strictly necessary, I presume, but we thought it best. It's Cousin John's wife out in Montana. We've never seen her, but we hear she was a very worthy woman, and a credit to the family."

And whether or not the Hatfield girls mourned deeply for the unknown wife of Cousin John, it is certain that for the remaining years of their lives their clothes were black, and were cut alike, and the village guessed that they had found a way to end their warfare, without acknowledging surrender, or proclaiming peace.

Powers Are Well Balanced.

A late estimate gives Russia a peace effective of \$58,000 men and France one of 512,000, making an aggregate for what is sometimes called the dual alliance of 1,370,000. On the other hand, Germany is credited with 580,000 men on a peace footing, Austria with 380,000, and Italy with 300,000, making an aggregate of 1,260,000. Thus the opposing forces are pretty nearly equal, with the advantage of position and facility of concentration in favor of the triple alliance, as they are in perfect communication, while France and Russia are separated. The war footings also show some preponderance for the dual over the triple alliance, but there, too, the elements of junction and separation are to be kept in mind.—New York Sun.

A Novel Raft.

In the valley of Bengal a curious means of travel is resorted to during the periodical rains. This is a raft constructed by tying together bamboo poles and supporting them on four or more pitchers, which are kept in place by cords. These pitchers are of earthenware or copper, spherical in form, with short necks and funnel tops, and are in general use for drawing water from the rivers and ponds.

Damage Caused by Cannons. Krupp guns are certainly not desirable neighbors, even in time of peace. The inhabitants of Essen suffer much in nerves and house property from the trials of the heavy guns close by. Many houses and walls show large fissures from the shocks, and many are actually unsafe. At the latest experiments all the doors and windows of Essen flew open at every discharge.

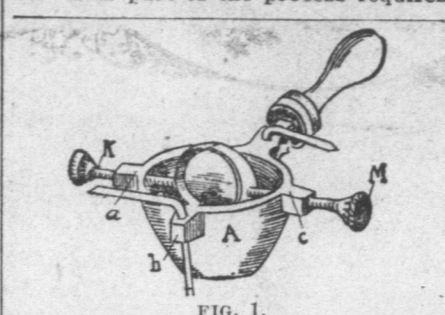
A Big Haal. A fisherman in Elliott bay, near Seattle, recently took over nineteen hundred salmon in one haul of the seine. This is the largest haul ever made in that section. Even the rivers and bays are doing their best to help along the era of good times.

The man who registers at the hotel at night can be said to be on the "re-tired list."

FOR SOLDERING JEWELRY.

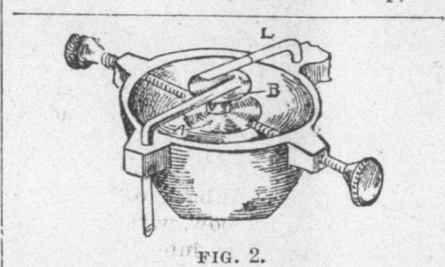
A New Soldering-Pan, Which Will Be Found Very Useful.

Watchmakers in the country who are often called on to repair jewelry can doubtless use the soldering-pan described and illustrated in the Swiss Uhrmacher Zeitung. As is known, the broken parts—for instance, the soldered joint of a finger ring—must be carefully united with binding wire, before the actual job of soldering is commenced. This part of the process requires



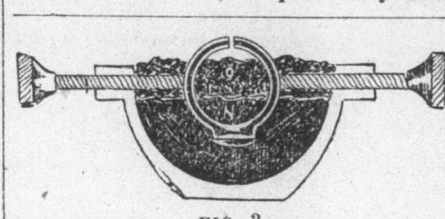
a certain practice, if the repairer does not desire to spend too much time on the job. Next there are various difficulties in hard-soldering jewelry with pearls and jewels, because these cannot withstand the heat. These two difficulties are fairly well remedied by the pan shown in the accompanying illustration.

It consists of a suitable deep copper pan—A, figure 1—furnished with handle. The pan has two lateral projections—a and c—in which move two milled screws—K and M. These may be used to good effect, if a burst ring is to be soldered, as it is only necessary to fasten it between the screws K and M as shown in figure 1, with the joint to be soldered turned up, af-



ter which the job of soldering may be undertaken, without even soiling one's finger with the coal.

For other purposes the two clamps L L, figure 2, are used, beside the screws K and M—for instance, when the upper plate B is to be soldered upon a shirt button. Of the two clamps, one moves in the handle of the pan; the other in an opposite lying shoulder b, figure 1, moving with tight friction, so that they will keep steady the part B to be soldered, if previously the



lower part A of the shirt button was fastened between the screws (compare figure 2).

In figure 3 the pan is shown in cross section, to show how it is to be used in case a ring with jewel is to be soldered. This is to be fastened as deeply as possible between the screws and the pan is then tilted to a proper height with sand. Above is placed a layer—O—of small pieces of coal or asbestos and soldering may then be commenced without danger to the jewel.

How Long Can Seeds Live?

An Italian Signor Italo Giglioli, has just published the results of experiments to determine how long the vital principle can exist in seeds. These experiments were begun in 1874 and 1878, when the seeds were deposited in various gases and solutions. In 1894 the seeds were taken out and planted. On the whole, a small proportion of the seeds germinated; of those preserved in hydrogen, carbonic acid and sulphuretted hydrogen, none; but of those kept in nitrogen more than a half survived. Almost all those preserved in liquids died, but two-thirds of those kept in alcohol lived. Signor Giglioli believes that if he had known at the beginning how deadly moisture is to seeds kept in gas he could have saved a larger proportion. Indeed, he says that he suspects that "latent vitality may exist for an indefinite period when sufficient care is taken to prevent all interchange with the surrounding medium."

Naming Colors.

Mr. Herbert Spencer has lately published an extract from his autobiography—a work which, he says, is already in print, but is not to be published until after his death. The difficulty and confusion in naming tints and shades led him to write a suggestion which a newspaper correspondence on the subject now induces him to take from that autobiography. He proposes that the tints shall be named on the principle of "boxing the compass," and to illustrate it he gives a partial list of shades, thus: "Red, red by blue, red blue, red blue by red, red blue, red blue by blue," and so forth. The same system is suggested for the shades from blue to yellow, and from yellow to red. It sounds a little fanciful, but Herbert Spencer's ideas are not to be rejected simply because they are novel and strike one at first as grotesque.

A Peculiar Affliction.

Of the 4,000 soldiers lying in the hospitals at Madagascar a great many suffer from abscesses on the legs, caused by grass seeds having sharp barbs which enter the flesh. This is news, though it is not new. Before the war many creoles, working in the gold mines there, lost some of their toes, and sometimes the whole foot, in consequence of wounds inflicted by the tiny points of such poisonous grass seeds.

Solomon Was a Tax Eater.

During the reign of Solomon the taxation of the Hebrews became so heavy that immediately on the accession of his son a demand for a reduction was made, and upon its refusal the chief tax collector, Adoram, was stoned to death, and a secession of the ten tribes at once followed.

A Pittsburgh girl whose lover is a whitewasher named Kelsey, always calls him "Kelsey-mine."

Dancing may improve your carriage somewhat, but it is no valuable accomplishment for a horse.



To put your trust in princes is unwise in many cases: But it is worse to trust in kings When 't'other man has axes.

—Yenowine's News.

Race prejudice is all right if it leads a man to refrain from putting his money on the wrong horse.—Yonkers Statesman.

"Did I understand you to say you were a pugilist?" "Dat's what." "Manual, oral or calligraphic?"—Indianapolis Journal.

She—Have you ever loved anybody else, Harold? He (apologetically)—Well—you know how it is yourself.—Somerville Journal.

He—Trudchen, dear, this kiss tells you all I have to say. Have you understood me? She—Oh, please, say it again.—Deutsche Warte.

She says she can't afford a cab—Expenses she must curb, Yet when she walks upon the street Her carriage is superb. —New York Herald.

Spencer (vindictively)—I've an old score to settle with you, Ferguson (blithely)—I know you have. That twenty you owed me so long.—New York Herald.

Mrs. Shopleigh—Is it any trouble to you to show goods? Mr. Cashell—No, ma'am. But it's a good deal of trouble to sell them, sometimes.—New York Herald.

Foreman (through the speaking tube)—Where do you want that stuff about Turkey put? Night editor (yelling back) On the inside, of course.—Chicago Tribune.

The glorious charge of the Light Brigade.

By Tennyson famously sung.

Is nothing to that which my doctor made

For taking a look at my tongue.

—Yenowine's News.

Muggins—They tell me B'jones is a very devoted husband. Buggins—Yes, indeed. Why he actually goes to his own wife's afternoon teas.—Philadelphia Record.

Miss Pert—Is Miss Strait Lace circumpect? Miss Castile—Circumpect? Why, she won't accompany a young man on the piano without a chaperon.—Salon Gazette.

Elise—My dearest Stella! I haven't seen you for four months. How is your Charles? Stella—Oh, my Charles has changed very much since then. His name is now Robert!—Fliegende Blaetter.

We are taught by experience stern That the girl who doth manage to catch A husband with money to burn Is likely to make a good match. —Philadelphia Record.

Mrs. Snaggs—I understand that paper is made of wood now. Mr. Snaggs—Yes; so is string. "String?" "Yes; what else do you suppose cordwood is used for?"—Pittsburg Chronicle-Telegraph.

Goodfellow—If my clothes were not too big for you, I'd give you an old suit. Hungry Hank (gratefully)—Boy! if you'd give me the price of a square meal, I warrant they'd fit me all right. —Truth.

Let us be thankful when we eat—Though skies be sad and murky—That though we still love turkey meat, We do not live in Turkey. —Atlanta Constitution.

Codger—Funny that such a quiet, domestic sort of a chap as you should remain a bachelor. Didn't you ever think of marrying? Solus—Yes; perhaps that is the reason I never married.—Boston Transcript.

Strawber—"Dr. Probe has been treating my rheumatism for the past six months." Singler—"Are you any better?" Strawber—"I should say so. When he came with his bill yesterday, I was able to run like a deer."—Harper's Bazar.

Mrs. Prattle (to her visitor)—Have you heard of the splendid catch Miss Swiftly has made? She is engaged to a nobleman, the baron of—(to her husband) What is he baron of, my dear? Mr. Prattle (who has met him)—Ideas.—Brooklyn Life.

Success is a toboggan slide: It's mighty slippery, brother, You scarcely reach one end before You're hustling for the other. —Washington Star.

"If I give you friend a place," said the banker, "he will have to give a bond. I suppose you will go on?" "Bond?" exclaimed the other man. "Why, he can be trusted with uncoupled millions." "Yes; but all the money we have is counted."—Indianapolis Journal.

"Have you anything to say before sentence is pronounced against you?" asked the judge. "The only thing I'm kickin' about," answered the convicted burglar, "is bein' identified by a man that kept his head under the bed clothes the whole time. That's wrong."—Judge.

"How are all our great landed estates in England?" asked the American pleasantly. "Yours" exclaimed the Englishman. "Certainly." "I don't see what claim you have to them?" "No? Well, perhaps you can tell me what would have become of them if it had not been for the money of our girls."—Chicago Evening Post.

The Sense of Direction. If there be, as some suppose, a sixth sense, by which animals, birds and insects know in which direction to move toward a given spot, how many strange things it explains! The late Professor Riley once hatched some Japanese alanthus silkworms in Chicago. He confined a female moth in a small cage; he carried a male of the family by night to another part of the city, a mile and a half away, and liberated it, having first attached a silk thread to its abdomen. In the morning the male moth was hovering around the cage of his imprisoned sister.