subject of these remarks is 22 years old, perfectly formed in every respect, is intelligent, well educated, and weighs only 33 pounds! There are few places in the city where the old and young can spend an hour more pleasantly than by dropping into Hope Chapel, any afternoon or evening, and witnessing the exhibition of this very small specimen of humanity.

CHILDRENS' CONFIDENCE—HOW THEY SHOULD BE TREATED.

The annexed article (copied from *Life Illustrated*) we commend to the perusal of parents. It contains good practical advice; and if it is diverging a little from our sphere to publish such articles, we are sure it will be read with interest and benefit by many of the readers of the SCIENTIFIC AMERICAN:—

"Do you want to learn how to make the children love you? Do you want the key that will unlock the innermost recesses of their natures? Then sympathize with them always. Never allow yourself to ridicule any of their little secrets. Never say, 'Oh, pshaw!' when they come to show you a new kite or marvelous top, and 'I can't be troubled,' when the hard knot won't be untied, and two and two obstinately refuse to make four on their little slates. Kites and knots are only the precursors of older thoughts and deeper trials which the parents may one day plead in vain to share! Don't laugh at any of a child's ideas, however odd or absurd they may seem to you; let them find your sympathy ready in all their wonderments and aspirations. Is there any man so wise in his own conceit as to have forgotten that there was a time once when he, also, was a child? The little folks are too much crowded out in this world; people generally seem to think they can be put in anywhere, or made to eat anything, or crammed into any out-of-the-way corner, to amuse themselves anyhow. We don't agree with these cross-grained wiseacres. Children have just as much right to the car window and easy seat as anybody. It don't take much to make a child love you and trust in you, and the benefits to him are absolutely incalculable. Oh, how much better it is for children to bring all their cares and troubles and temptations under the gentle eye of a wise parent! What a safeguard it is for them to feel that there is always a kind ear to listen to their doubts and griefs, and a gentle shoulder for their little heads to nestle against! Respect their rights; never think you can say bitter things in their presence, or do unjust actions. They are the finest discriminators of fair and unfair in the world. Somebody says: 'When you are inclined to be cross with children for being slow to learn, just try a moment to write with your left hand. See how awkward it proves, and then remember that with children it is *all* left hand!' Preserve us from those precocious infants who spring up ready-made philosophers and casuists; cherry-cheeked little blockheads are infinitely preferable. Above all, do not be ashamed to let them *know* that you love them. Remember, they will be men and women some day, and the slightest word which may influence their future lives should become a thing of moment in your eyes."

UNDERDRAINING WITH MOLE PLOWS.—Writing from Madison county, a correspondent of the *Ohio Cultivator* says: "I know of some ditches that have been in operation in this county near three years, and the unanimous testimony thus far is, that they are now better than when first completed, and that instead of crumbling and filling-up, (as many would have us believe is the case), they improve with use and age, and now discharge more water and more freely than at first. Now this cannot be ascribed to great falls, thereby giving the water a strong forward impetus. On the contrary, this country is notoriously level, and particularly those sections that have been ditched with little descent—mostly natural prairie lands; and yet these same ditches, many of them, have furnished an abundance of clear, good water for stock, even during the greater part of the extreme drought of the past summer, when wells, stock-pools, and running streams failed in part or entirely, and this supply, too, coming from fields that had hitherto been cultivated in corn with fair results, and were but a few years ago considered sufficiently drained by natural surface drainage. But our farmers now find that the more underdrains through their fields, the better results and returns for labor, and that, in either wet or dry summers, crops mature earlier and better when the ditcher has been most employed."

AMERICAN NAVAL ARCHITECTURE.

[Reported expressly for the Scientific American.]

THE STEAMER "AUSTIN."

This steamer is from the hands of the well-known builders, Harlan, Hollingsworth & Co., of Wilmington, Delaware, and adds another to the many well-earned triumphs in the construction and ultimate success of fast and sea-worthy steam vessels. She has just left this port for her appropriate place on the route of her intended service—New Orleans to Brazos. We herewith give full and minute particulars relative to her construction:—Length on deck, from fore part of stem to after part of stern post, above the spar deck, 204 feet; breadth of beam (molded) at midship section above the main wales, 34 feet; depth of hold 10 feet; depth of hold to spar deck, 17 feet 9 inches; draft of water at load line, 7 feet 8 inches; dip of wheel at load line, 5 feet, 3 inches.

Her frame is of wrought iron plates, $\frac{1}{2}$ to $\frac{5}{8}$ of an inch in thickness, and securely fastened with rivets $\frac{5}{8}$ of an inch in diameter, every $2\frac{1}{4}$ inches. The floors are shaped I, molded 4 inches; sided $1\frac{1}{8}$ inches; depth, 18 inches; thickness, 7-16 and $\frac{1}{2}$ of an inch, and finished with angle iron. Frames are 16 and 18 inches apart at centers; keel 5 inches deep, shape U, double. Keelsons are 12 in number, fore and aft, 20 inches high by $\frac{1}{2}$ of an inch, and 9-16 of an inch in thickness; ceiling of white pine, 2 inches deep on the top of keelsons.

She is fitted with one powerful vertical beam condensing engine; diameter of cylinder 44 inches; length of stroke of piston 11 feet; diameter of water wheels 30 feet; material of same, iron; number of blades, 26; width of blades, 6 feet 7 inches; depth of same, 1 foot 11 inches.

She has one return tubular boiler, the length of which is 24 feet; width, 16 feet; and 9 feet 2 inches in hight; located in hold, and has a water bottom; does not use blowers to furnace. The fire bars are 6 feet 4 inches in length; flues below in boiler are 8 in number; flues above, the same; length of flues above, 19 feet 3 inches: length of flues below, 15 feet 8 inches. Ample protection with iron and felt has been made against fire communicating to the wood-work from the boiler.

The hight of smoke pipe, above grates, is 51 feet; diameter of same, 65 inches; area of heating surface, 2,000 square feet; capacity of coal bunkers, 265 tuns. She has one smoke pipe, one extra size independent steam fire and bilge pump, one bilge injection, and bottom valves or cocks to all openings in her bottom. She has three water-tight athwartship bulkheads, and four cargo or loading ports. The maximum pressure of steam is 25 pounds; cut off at half stroke, and the maximum revolutions at the above pressure are 17.

Her cabins are finely fitted-up and afford pleasant and comfortable accommodations for passengers. She is owned by Charles Morgan, Esq., of this city. The tunnage of this steamer is 650 tuns.

WEEKLY SUMMARY OF INVENTIONS.

The following inventions are among the most useful improvements patented this week. For the claims to these inventions the reader is referred to the official list on another page:—

WELDING TOGETHER LARGE WROUGHT IRON PLATES.

If large plates or planks of wrought iron such as are used for steam boilers, ships' "skins," decks, &c., could all be welded together in one piece, instead of riveted, the same strength would be obtained with two-thirds the thickness of metal, or with the same thickness of metal one-third more strength would be obtained. J. C. Cooke, of Middletown, Conn., has devised an invention which consists in effecting the above object, and in welding together very large and unwieldy planks of wrought iron, such as cannot be brought to the smith's forge, by the employment of a portable apparatus consisting of hammers or rollers which may be clamped to the plates to be welded, and moved along as the welding proceeds; and also in the use of the aero-hydrogen or oxy-hydrogen flame, for heating the plates to the "welding point," thus virtually taking the fire to the work instead of the work to the fire. The gas used excludes atmospheric air from the plates at the welding point, and thus prevents oxydation and consequently the formation of scale.

FILES.

This invention is more especially applicable to files for filing soft metal and their alloys and wood, its object being to prevent the clogging of the teeth, which is the cause of so much trouble in the use of files of ordinary "cut" on such materials. It consists in the combination with a suitable transverse cut, of longitudinal grooves. The credit of this invention is due to Pietro Cinquini, of West Meriden, Conn.

POLYGONAL SHAPED ARTICLES.

This invention consists in combining a turning lathe having a pattern attached, with a rotary planer and turning tool in such a way that the work is first turned and then planed or cut in polygonal form; the pattern serving as a guide to both the planer and turning tool. The invention also consists in a peculiar arrangement of the planer and the turning tool, whereby they may be readily adjusted in the prosecution of the work, as may be required, and allowed, when at work, to be perfectly operated upon by the pattern so as to effect the desired end. The inventor of this improvement is John Cook, of Buffalo, N. Y.

GRINDING MILL.

This invention consists, 1st: In an improved mode of hanging the runner, whereby it is allowed, as it rotates, to conform to the position of the stationary stone, and the parrallelism of the two stones preserved. The invention consists, 2d: In an improved bush, constructed with a view of keeping the spindle perfectly lubricated, and at the same time confining the oil within its chamber and protecting the same and the part of the spindle within the bush, from dust and the admission of all other improper substances. These improvements were designed by Edmund Munson, of Utica, N. Y.

MEASURING FAUCET.

This invention consists in applying a weighing device to a faucet in such a way that the substance to be drawn may be measured by weight, and the flow of the substance be automatically cut off by the gravity of the same, when the proper or desired quantity has passed into the vessel prepared to receive it. This device has been patented to George K. Babcock, of Utica, N. Y.

FOREIGN NEWS AND MARKETS.

Conroy's Cork-cutter.—A recent number of the London *Spectator* has the following article on American ingenuity, as exemplified in the manufacture of corks by machinery invented by Edward Conroy, of Boston, Mass., who obtained a patent, through the Scientific American Patent Agency, on Nov. 2, 1858. An illustration of this ingenious machine was published on page 345, Vol. I. (new series) of the SCIENTIFIC AMERICAN:—

"Hamlet alludes to a certain large form of cork with contempt; but Hamlet, excellent as he was in qualities of head and heart, was not a practical man. Even he, however, might have been impressed with the statistics of the trade, if Horatio had brought them before him. Take the number of corks alone: how many are there used in London daily? One million. One city firm consumes 7,200,000 annually. What is the function of the cork? It is to combine thorough inclosure of fluids we value, for health, for pleasure, for medicament, with thoroughly ready outpouring. Of course, in a population of 2,300,000—exclusive of the British empire ("on which the sun" &c.)—it is important to keep up the supply of these precious but perishable helps; but heretofore the making of corks has been an art and mystery. The cork-cutters boasted that the thing could only be done by hand. The cork was, as it were, the outpost of the printer's composing desk; it has surrendered; corks are cut by machinery. On the 3d of September last, we described a machine which accomplished the work well and rapidly, insomuch that two men could turn out 100 gross in 10 hours—14,000 a day, or 4,300,000 a year—or about one-ninetieth part of the corks needed by this devouring metropolis. So well are the vast figures of modern statistics to be met by modern mechanical invention. But we have a growing population, and a wine trade about to enjoy a sudden development; and we have this week described the more powerful machine to meet that larger want. The cork-cutters must be delighted. Not at all. Like Austria, instead of identifying themselves with the progress of the age, they identify themselves with its petrified 'stability.' They are firm in the faith that corks can only be cut by hand; they are sure that they ought only to be so cut; and the consequence is that the trade is passing out of their hands to that of boys, the rising cork-cutters, the cork-cutters of the future! For, with the new American machine, one