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

boy can turn out from fifty to one hundred gross a day. Surely, the old cork-cutter of the past is ambitious of being a fossil—he longs to be one atom in the strata which we are constantly burying and leaving, in our upward march of earth! But, if "Young America" is bright in invention, and can dash out a cork, has not this great country (head of the machine-making world) a new branch of trade brought to it, in the shape of the new cork-cutting machine? By no means. There is conservatism also in the trade of engine-making. The patentee of the machine finds that he can carry the iron from England to America, have the machines made in America—and they do not accept low wages there—and bring it back to England cheaper than he can have it made in England. Now why is this? The reason is as plain as the cork from your bottle of champagne. In the making of the machine, a machine is used; in that prior machine there is a certain shaft, which shaft, in England, is formed turner-wise, by hand, in America it is done by machinery. There they make the machines *to* make the machines *that* make the machines of the cork-cutter."

Explosion in a Coal Mine.—An explosion of gas in a coal mine occurred in the early part of March at Burraden, Northumberland, by which 73 men and boys came to a ghastly and untimely end. About 120 men were employed in the mine, which was of immense extent, one passage in it being more than a mile in length. The gradual accumulation of the gas had been perceived for more than six weeks, and several of the men had left the mine from fear of an accident. A slight preliminary explosion gave warning to a portion of the hands, a few of whom escaped in consequence. The principal explosion was of tremendous force, destroying the machinery and wagons, and instantly killing the larger portion of the persons employed.

REMARKABLE DISCOVERY AT ROME.

The Detroit *Advertiser* (of March 24th) publishes a private letter, written by Lewis Cass, Jr., to Rev. Mr. Duffield, of Detroit. From this letter we make the following extracts:—

"In the progress of the excavations on the Palatin, where stood the house-of-gold of the Cæsars, a fragment of an arch, covered with inscription and delineations, was brought to view. Further explorations in the same direction resulted in the exposure of a room, on the walls of which was found a sketch, cut or engraved with a sharp-pointed instrument, of a crucifix, together with the figure of a man in the attitude of prayer, standing near it. The announcement of this discovery created great interest. By order of the Pope, the design was removed from its position, happily without injury, and confided to the care of Monsignore Macchi, who invited me to inspect it, and by whose permission I procured a copy to be made, which is herewith enclosed. It is needless to say that this event has elicited elaborate speculations. Notwithstanding a general discrepancy, the conflicting views concur, with scarcely an exception, in the conclusion that the aim of the sketch was to cast ridicule on the worship of the Christians. It presents the outlines of a cross, on which is a human figure bearing the head of an ass. A tunic envelops the waist, and the arms and legs are partially covered with bandages. To the left, with one hand raised in the posture of adoration, as depicted on ancient monuments, appears the form of a man, while below is seen the following inscription, 'Alexander adores God.' The execution of the engraving, as you will perceive from the *fac simile*, of which the scale is one-fourth smaller than the original, indicates an entire ignorance of art, being stiff and hard, without ease or grace whatever. Satisfactory evidence refers the date of it to the reign of Septimus Severus. There were numerous Christians in his court, one of whom, it is supposed, of the name of Alexander, was thus exposed to ridicule by his pagan associate or companion.

"Familiar as you are with the early history of our religion, it is unnecessary to recall to your recollection the existence of the legend, current throughout the Roman dominion in the days of the empire, that the Christians worshiped a divinity whose head differed in no respect from that of an ass. In Africa, then filled with rich and splendid cities, this was the popular belief. It was inculcated in the Magian school of Asia, from the sands of Parthia to the Pisidian forests, and levelled at the converts to the strange faith in the streets of Narheordea, Amida and Mardin-on-the-Hill. The later Gnostics in particular, more especially the sects of Bardesanes, omitted no occasion to disseminate this calumny, accompanied with every epithet of contempt and detestation. At Orla it was proclaimed from the throne in the sounds of trumpets, followed by a decree prohibiting the use of arms and the Arabic language to the worshipers of the God of Nazareth, and requiring them thenceforth to wear girdles of leather in token of their obnoxious creed. We meet with it in the writings of Tacitus, a bitter and relentless enemy to the Christians, whom he styles outcasts of the human race. It is also alluded to in the pages of the contemporary fathers, by whom it was repelled with vehement and irrepressible indignation. The origin of this monstrous invention is lost to us. There can be little doubt, however, that it had its foundation in the hatred with which the disciples of the pure and spiritual doctrine were invariably regarded by the idolatrous nations among whom they lived. But whatever the source, the first mention of this calumny occurs in the records relating to the period intervening between the years 120 and 250 of our era, subsequent to which epoch all trace of it disappears. Precisely during the same period the room in which the design was found was constructed. The palace of the Cæsars on the Palatin, as you are aware, was the growth of successive reigns. That part of it which embraces the chamber in question was built by Hadrian, as the bricks of which it is chiefly composed attest. They are impressed with the names and titles of the Consuls Pactinus and Apronicanus. This coincidence—the prevalence of the legend in the years already mentioned, and during that period only, and the erection within the same time of the wall on which the drawing is traced—establishes satisfactorily the purpose of the sketch, as well as the date of its execution. Still more conclusive, perhaps, is the manner in which the figure upon the cross is presented to view. It is delineated with drapery, while it was the invariable practice in executions of this nature—a mode of punishment very common among the Romans—to expose the victim or criminal in a state of nakedness. The discrepancy finds its sole warrant in the tradition that our Lord was put to death with a garment about his loins, and its admission in a work emanating from the hands of a pagan whom we cannot suppose to have been influenced by any sentiments of awe or respect, and whose experience would never have suggested such a departure from the uniform custom, indicates clearly a caricature, of which the first requisite is uniformity to its prototype. Finally, the words, 'Alexander adores God,' admit of no other interpretation; nothing in history, legendary or monumental, tending to the idea that the symbol of a crucified being was ever regarded as an object of veneration by any other sect than the followers of Christianity."

LITERARY MONOMANIA AND DISHONESTY.—The foreign papers report that recently, at Leipsic, a case of singular monomania led to a most deplorable result. Dr. Lindner, a professor of theology at the University of that town, was tried for the purloining of manuscripts from the Academical Library, and sentenced to six years' penal imprisonment. The unfortunate man had allowed himself to become the slave of a paramount passion for old parchment. To know a fine, rotten, and worm-eaten codex to be within his reach, yet not in his possession, was too much for the moral strength of this *savant*, otherwise of irreproachable character. Beginning with the abstraction of one or two remarkably fine pages from some manuscript or other, he gradually proceeded to entire volumes, and, during a space or four years, despoiled the library of a great number of priceless rarities. This, though it might have eventually brought about his expulsion from the University, would have scarcely subjected the bibliomaniac to the penalties of the criminal law. But, with a looseness of principle which the jury found it impossible to overlook, Dr. Lindner occasionally bargained away his ill-gotten treasures for others, receiving the difference in money whenever there was a disparity in the value of the manuscripts exchanged. But for the great liberty granted to German professors in the use of public libraries, his criminal proceedings must have been discovered long ago, as his dishonesty was certainly not greater than his folly and want of the most ordinary caution.

ISSUED FROM THE UNITED STATES PATENT OFFICE FOR THE WEEK ENDING APRIL 3, 1860.

[Reported Officially for the SCIENTIFIC AMERICAN.]

*** Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

27,675.—John R. Albertson, of East Deer township, Pa., for an Improvement in Garden Hoes:

I claim shank, b, shoulder, c, dovetail, d, washer, e, blade, a, with the opening, A; the whole being constructed and arranged as and for the purpose set forth.

27,676.—Edward H. Anderson, of Easton, Md., for an Improvement in Vapor Burners:

I claim the original arrangement of the apparatus set forth, and the new and useful adaptation of them to the purpose of producing a light which will be economical in cost, and which will be entirely exempt from the danger attending many other gas lamps.

I also claim the invention of a new and useful mode of procuring light by the combined action of atmospheric air and heat, by means of my original adaptation of the jet holes, N N, in the upper end of the conducting pipe, A, acting upon the under surface of the chamber, D; the blow-pipe principle of the jets producing the requisite heat to manufacture the gas as required for the support of the flame, and which combination enables me to raise the flame above the entire apparatus, thus rendering it clear of all obstructions; all constructed and operating as set forth.

27,677.—Edward Armstrong, of Pittsburgh, Pa., for an Improvement in Governor Valves of Steam Engines:

I claim dividing the valve-chamber of governor valves into two compartments, by means of the division plate, c, provided with valves, j and i, constructed, arranged and operated in the manner described and for the purpose set forth.

27,678.—A. Merritt Asay and J. Lambert Asay, of Philadelphia, Pa., for an Improvement in the Method of Fastening Artificial Teeth:

We claim fastening artificial teeth to a metallic plate by interposing between the said teeth and plate a strip of vulcanizable gum and vulcanizing or hardening the same; the teeth having been adjusted to the plate, as set forth.

We also claim packing with gum the interstices between the teeth and plate or between the teeth themselves, when secured to the plate by riveting or any other of the usual modes, and vulcanizing or hardening the packing after it has been adjusted, as specified.

27,679 —Geo. K. Babcock, of Utica, N. Y., for an Improvement in Measuring Faucets:

I claim connecting to the slide or valve of a faucet, a scale beam or weighing device, arranged to operate as shown, or in any equivalent way, so that the substance to be drawn may be measured by its weight.

I further claim the combination of the scale beam, I, pawl or catch, H, arm, F, lever, D, and valve rod, C, with its valve, B, fitted within the tube, A; all arranged for joint operation substantially as and for the purpose set forth.

27,680.—John Bailey and John Decamp, of Cincinnati, Ohio, for an Improved Spring Bed Bottom:

We claim the arrangement of the side rails, A, transverse rails, B, springs, B d d', slats, C, and straps, F; the whole being constructed and combined in the manner and for the purposes set forth.

27,681.—W. M. Baker, of Walpole, Ind., for an Improved Refrigerator:

I claim the arrangement of a sheet, B, of canvas or other fibrous material, in combination with the grooved and perforated or slotted sides, b, of the case, A, and with the reservoir, C, or its equivalent, constructed and operating substantially in the manner and for the purpose specified.

[This refrigerator belongs to that class in which the evaporation of water or other fluid is employed for the purpose of cooling articles kept within it: and the invention consists in the arrangement of a piece of canvas or other fibrous fabric over the corrugated or slotted inclined sides of the case that incloses the articles to be kept cool, in combination with a perforated reservoir on the top, and with a receptacle on the bottom, in such a manner that water or other fluid poured into the reservoir on the top is spread by the canvas or other fibrous fabric over an extended surface, where it is rapidly evaporated by the influence of the air that is allowed on both sides of the same, and that by such rapid evaporation, a pretty low temperature is effected and maintained in the interior of the case.]

27,682.—L. B. Batcheller, of Rochester, N. Y., for an Improvement in Machines for Manufacturing Barrel Heads:

I claim the combination and arrangement of the passive disk, C, with the clamping disk, C', hollow cam shaft, G, and foot lever, L, together with the cord, J, for actuating the saw table, U, simultaneously with the clamping of the staves, and the pawl and lever, P, operating conjointly, substantially as and for the purposes set forth.

I further claim the application of the lugs or hooks, k k, to the clamping disk, C', for the purpose of sustaining the staves while being supplied to the disks, substantially in the manner set forth.

27,683.—H. N. Bill and J. C. Bill, of Willimantic, Conn., for an Improvement in Scales:

We claim, first, The combination of the weighted lever, D D', dependent rod, E, vibrating rod, F, perpendicular scale rod, G, and swinging arms, J, arranged and combined substantially as described and represented.

Second, We claim the slotted index hand, I, hung on an isolated center from the fulcrum of the weighted lever, D, in the manner and for the purposes set forth.

[This invention consists in the employment of a gravitating lever, in lieu of a spring or movable weights that are at present in use, and in hanging this lever in a novel manner so as to be effected by the scale beam or a weight placed in the scale pan, and thus register the exact weight of any article placed on the scale beam. It also consists in a novel manner of hanging the registering index hand, so as to compensate for the diminished arc the short arm of the gravitating lever makes as the lever approaches a horizontal line.]

27,684.—Richard F. Bond, of Cambridge, Mass., for an Improved Construction of Clock Weights:

I claim the improved clock weight described, having a groove around its circumference for the reception of the cord, as set forth, for the purpose specified.