tant, had no thickness, it would seem to follow that the surfaces of such, when separated, must be half the thickness of nothing!"

The author, of course, denies that the two solids, when in contact, have but one surface common to both, and, on the contrary, affirms that each has its own surface, entirely distinct and separate from the other; and not only so, but each occupying a place and position entirely different from the other.

It was while considering a solution, by Mr. J. A. Parker, New York, of the quadrature of the circle, in the truth of which solution he coincides, that the author, as he intimates, began to see the breadth of a line and the thickness of a surface. As to this solution itself—

"Mr. Parker has, with a bold conception and singular originality, applied it to some of the astronomical circles, and obtained remarkable and startling results, indicating that in the motions and periods of the heavenly bodies there are perfect mathematical relations much more wonderful and extensive than have yet been understood."

Mr. Parker's work is not yet published; but this we may say, that if any one think it *improbable* that remarkable and startling results remain to be expiscated in the sphere of modern astronomy, he is very much mistaken. It is now admitted by Sir John Herschell and other eminent astronomers that Newton's grand law is incapable of explaining several highly important phenomena; and, indeed, it is obvious, on a little consideration, free of mere slavish and unreasoning deference to so great an authority, that although the simple law of gravitation most beautifully accounts for the mere *elliptical* orbits of the solar satellites, it utterly fails to explain one of the most glaring peculiarities of the orbits of the *planets* in general, namely, their obvious tendency to geometrical *circularity*. We have our own ideas on this curious subject, but this is not the place to enter on them: we shall only here remark, without committing ourselves either to Mr. Parker's quadrature of the circle, or to the certainly ingenious and original line of reasoning which Mr. Smith has cut out for himself, in a way that is at least likely to carry common-sense minds along with him,—that if any thing startling relative to astronomical *circles* have been recently discovered, it is to be hoped it will shed some striking light on the no less startling defect in established doctrine just now hinted at.

That the book under notice is not intended merely for advanced geometricians, but is calculated even to attract the attention of those hitherto quite untaught in the science, may be inferred from the following passage, with which we must conclude:—

"Geometry should always precede arithmetic, or rather go hand in hand with it, in a system of education. As soon as a child has learned to count his ten fingers, I would begin to teach him geometry; for as it is the most simple and perfect of all sciences, so it is the most readily comprehended if properly taught. Through geometry he should learn all his arithmetic. Then would he find the dark and puzzling labyrinths of numbers to lighten up at every step of his progress. Then would the toilsome and blind path of arithmetic become a bright and pleasant road, and her mystic and vague expressions open to him full of clear and beautiful meaning. Then would he see and comprehend what is meant by those perplexing, enigmatical things, the square root and the cube root. Then would the boy, 'with shining morning face,' no longer be seen 'creeping like snail unwillingly to school,' but tripping with a light heart, and singing for joy."

Miscellanea.

BAKEWELL'S COPYING TELEGRAPH.—We some time since gave an account of a very ingenious invention, by means of which an individual writing at one extremity of the country, can transmit, through a single telegraphic wire, a perfect fac-simile of what he has written, so that it shall appear in course of a few minutes, though it were a whole page or more, at the other extremity of the line, and of course at however great a distance. We are glad to perceive that this beau-ideal of the telegraphic pen is still held to be a practicable invention. We had feared that it had turned out to be more perfect in theory than attainable in practice. But on Wednesday last Mr. Bakewell exhibited it at the Russell Institution, Great Coram-street, with considerable success. The principle, as many of our readers may remember, consists mainly in the winding of an iron point round a cylinder at each extremity of the line of telegraph, the cylinder in the one case being covered with a sheet of tinfoil written on with a non-conducting ink, while in the other it is covered with a sheet of paper chymically prepared, so that the iron points in electrical action (as both cylinders turn simultaneously, regulated in synchronous time by electro-magnetism) trace their apparent course round the cylinders *spirally*: the nonconducting intervals, as they pass over the ink in the one case, being marked and denoted in the other, by blank or white intervals in a blue spiral, so that an exact copy of the writing appears in white characters on a blue ground, and distinctly legible. The paper can also be prepared so as only *afterwards* to shew the writing, and thus to insure secrecy between correspondents.

FINE ARTS IN AMERICA.—When despotism or anarchy, or any of the rapid or insidious elements of destruction begin to sap the foundations of a nation's prosperity, it will quickly be seen in the langnor and decline of the fine arts, in painting, sculpture, architecture, and engraving. America is a young and rising republic, rising in strength, population, wealth, and the mechanical arts. Should she not—*is* she not—also rising, and rapidly, in her encouragement of the fine arts? Thirty years ago (but a *day* in a *nation's* life) there was not a collection of pictures in the United States worthy of being called a "gallery." Now we can count forty in the States of New York, Pennsylvania, and Ohio, and in each an "Art-Union," in the most flourishing condition. The tendency of the fine arts is from the old to the new world. Wealth gathers around it, by a national attraction, the finest specimens of the easel, the burin, and the chisel, and emigrating wealth and taste is constantly sending to our shores gems of art which meet a full appreciation from our travel-loving and quick idea-catching countrymen. The love of pictures is a true and a natural one. The red man rudely paints his battles on his robes, or carves them on the trunk of a tree. The western pioneer, for want of better, decks the walls of his log-cabin with handbill headings, newspaper wood-cuts, or circus wild beast exhibitions. If good pictures or good engravings cannot be obtained, miserable daubs, or immoral scrawls, will supply this demand. A *good* picture, either painted or engraved, is a moral lesson—a silent, but a powerful one.—*Buffalo Advertiser*.

HOUSE DECORATION, VIENNA.—From Vienna, says the *Expositor*, accounts have reached us of a magnificent and costly contribution, which a furniture manufacturer of that town is sending for the '51 Exhibition. It will consist of four rooms of a palace, each appropriately furnished and decorated. We are not yet at liberty to give the name of the manufacturer, or any detailed account of the furniture. The material is a peculiar Indian wood, rather lighter in colour than rosewood, and it is sculptured in the most artistic manner after the chastest designs of eminent artists. The bedstead alone, which is already completed, costs no less a sum than 12,000 gulden, about 1,200*l*., and the cost of the other articles is in proportion. The manufacturer will be in London in a week or so to arrange with the commissioners for the space he will require, which will, of course, be considerable, as his contribution will comprehend all the requirements for the four principal rooms of a palace in a style of the utmost magnificence. The gentleman is one of the members of the Vienna committee.

STEEL WITHOUT PIG-IRON.—An invention has been patented by Mr. Heath for the manufacture of steel from iron produced directly from the ore without being brought into the state of cast-iron. Ore, as usually reduced to metal, is mixed with a small portion of chloride or oxide of manganese, and some coal or fir tar, or other cheap carbonaceous matter, and heated to a welding heat: it is then compressed into a bloom, re-heated and shingled, hammered, or rolled into bars in the ordinary way; and the bar-iron thus produced is converted into steel by any of the usual processes.

SAW-MILL DRIVEN BY ARTESIAN WELLS.—At Millwood (says an American paper) Dr. Withers has a saw-mill which is driven by water supplied from six artesian wells, situated on the premises, at distances from the mill varying from some 50 to 200 yards, ranging in depth from 300 to nearly 600 feet, and affording nearly 1,000 gallons per minute. The water flows from all the wells to a common reservoir, and is conveyed thence to the mill by an aqueduct under ground, and is conveyed into a box or reservoir, whence it falls on a reaction-wheel 40 feet below, and thus puts the mill in motion. After acting on this wheel, the water is conveyed to the river by means of a tunnel, cut through a limestone rock 240 feet in length, and, at the highest point, upwards of 50 feet in depth. The tunnel is 5 feet 8 inches deep, by 4 wide. As the water is nowhere visible under the mill, and empties into the river at a point not seen from the mill, some 50 odd feet below the top of the bluff, the mill, when in motion, presents to the observer the appearance of self-acting machinery.

RAILWAY JOTTINGS.—Since our recent visit to Furness a great facility of access to its architectural and other attractions has been afforded by the opening of the Whitehaven and Furness Junction Railway throughout to the Furness line, near Broughton, in Furness, which took place on Tuesday in last week, when the last portion of it from Bootle to the junction was formally opened. The length of line is in all thirty-four miles, and there are stations at St. Bees, Netherton, Braystones, Sellafield, Seascale, Drigg, Ravenglass, Eskmeals, and Sylecroft. The engineer was Mr. Dees, and Messrs. Jopling and Fell were the contractors, to whom much praise has been given.——The railway communication between Birkenhead and Manchester has been completed by the opening of the Chester and Warrington branch of the Birkenhead, Lancashire, and Cheshire junction line on Thursday in last week.——Messrs. Locke and Errington, engineers, have examined the Deeside railway route, and report that the line may now be carried out for considerably less than 300,000*l*. the original estimate of 1840.——We hear that a passenger carriage of very large dimensions, built entirely of iron, and capable of containing from sixty to seventy persons, has been constructed under the direction of Mr. M'Connell, the superintendent of the locomotive department of the southern division of the London and North Western Railway. The carriage, according to the *Railway Record*, has been run experimentally on the line with the most satisfactory results. One great advantage of such a carriage, or train, if we may so call it, will be, that it will afford every facility to the movement of the guards throughout the train, as long insisted on in this journal, and at length taken up and strongly recommended to the railway companies by the Railway Commissioners.

EXPERIMENTS ON IRISH PEAT.—From 36,500 tons of peat, at 2*s*. per ton, the following produce, it is said, has been realised:—

365 tons of sulphate of ammonia, at 12*l*. per ton	£4,380
235 tons of acetate of lime, at 14*l*. per ton	3,570
10,000 gallons of naphtha, at 6*d*. per gallon	4,750
1,187,500 pounds of paraffine, at 1*d*. per gallon	5,475
70,000 gallons volatile oil, at 1*s*. per gallon	3,650
30,000 gallons of fixed oil, at 1*s*. per gallon	1,500
	£23,325

The profit, after deducting expenses of the sulphuric acid used in the manufacture, the wages, labour, cost of sending to market, &c., is stated to be 11,000*l*. or more than 100 per cent. on the outlay.

GLASS SHADES.—The largest ever produced was lately blown at Birmingham by an English workman. It is 62 inches by 26½ inches in diameter, and contains nearly 40 lbs. of metal. Until lately, a Frenchman was considered the most skilful workman in the employment of Messrs. Chance, in whose manufactory the shade alluded to has been blown. This man earns no less than 9*l*. a-week, according to a correspondent of the *Daily News*, who gives the dimensions of this monster "shade." A secret in blowing great glass bubbles was lately described in THE BUILDER. It consists simply in moistening the mouth with a little water before blowing. The water is converted, in the interior of the drop, into steam, which vastly aids the breath in extending the dimensions of the "bell."