Scientific American

NEW YORK, JUNE 28, 1851.

The Recognition of Genius and the Industrial Principle.

There has been a cheering and gradual advancement of sound principles during the past century. In the days of old, what were our forgers of iron and workers of brass, but the mere appendages of the State. The fighting and talking men alone were the recognised parts of it; eloquence and military skill were the true and almost the only passports to honor and distinction. The producing useful classes were good enough to be called *villians*, and their occupations *degrading* and *vile*. Like the fop in Henry IV., the mechanic could not pass by one of your blood and monied nobility but the latter had to use his pouncet-box, lest his patrician sensibilities should be shocked. The trade degraded the man. Some change has been made in the social advancement of the hard handed and brown-browed toilers, though, as a general thing the trade is still held to lower the man. The progress made is definitely marked in political advancement. In France, England, and the continent of Europe, the mechanics and artisans labored under the most unjust and exacting laws for the benefit of the nobility and favored monopolists. In France and England these unjust laws have been swept away, and so they have in many of the German States and Kingdoms. In the United states of America alone among all the nations of the world, the political rights of the mechanical classes are recognized. Here they stand on a level with every other class. It will yet come to this in other lands, and the great exhibition of the industry of all nations is one of "the signs of the times." The monopolies of trades and the mercantile monopolies—those odious enactments of the Stuarts—have crumbled away, and genius, enterprise, and industry, are now found to be the aristocrats which rule the world. Your jousts and tournaments; your royal military camps and gorgeous reviews, all dwindle down into utter insignificance when compared with the "Crystal Palace"—its external and internal triumphs. Men are now becoming something for what they can do and what they have done, not for what their fathers were. The aristocratic principle is the past participle, the industrial is the present. It is true, the great exhibition was designed by a Prince and is under the patronage of royalty, but the designing and patronizing of it, and the broad democracy of its whole management, are evident signs of the times, in the recognition of the aristocracy of genius and the industrial principle. That nation which most encourages and rewards genius and industry, understands its true interests best. The nation which produces most is the most powerful; this is well understood by all enlightened statesmen, hence we have the congress of industry now in London. How is it that the little kingdom of Great Britain, not so large as Virginia, exercises dominion over 200,000,000 of people situated in every quarter of the globe? By her genius and industry. Her Watts, her Arkwrights, her Cartwrights, Bells, Napiers, and Stephensons are the real levers of her power. In America industry has a wide scope—a broad sea and a fair wind. We have no guilds to make such a man as Sir Joshua Reynolds pay large fees, because he has not enrolled himself in the worshipful company of "painters and stainers." No Watt has to take refuge within the walls of a university to free himself from the feudal exactions of his fellow craftsmen. And what can we show for this industrial freedom? Sir H. L. Bulwer has said "no people in the world are so lightly taxed and powerfully protected," and let us add, produce so much of the essentially useful.

Much improvement has yet to be made in recognizing these principles in all their length and breadth. Moral worth is no doubt the first grand principle, but there is certainly a moral in recognising the right. Drones should be assigned their true position in society, and the cloth should not receive more homage than the man who produced it. By a full recognition of the claims of genius and industry, by all nations and all men, we expect yet to behold an era of inventions and discoveries, in comparison with which, the past great as it is shall be as the river Thames to the majestic Mississippi.

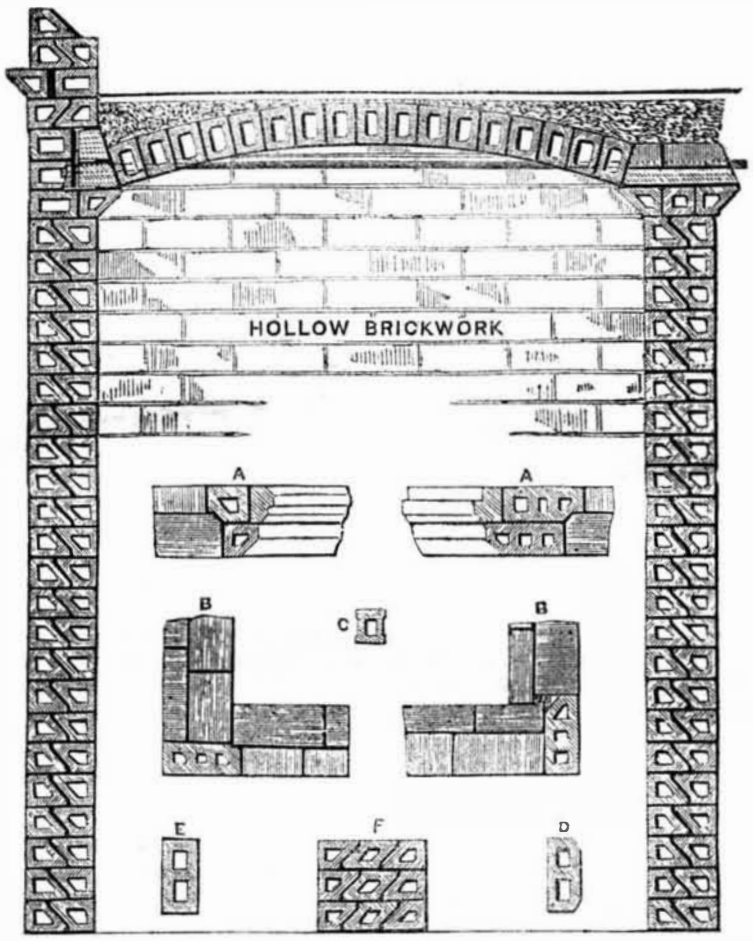
Pennsylvania Chrome Mines.

On the Octorara River, which separates Chester and Lancaster counties, there is Wood's chrome mine, about nine miles from Nottingham, which is about 170 feet deep, 200 feet long, and about 30 feet broad. This is considered to be the largest chrome mine in the world; and the researches and analyses of several chemists both of this country and Europe have ascertained that it ylelds the best ore, being nearly pure bi-chromate of iron, 93·384 is oxide of chrome. The mine has been worked about fifteen years, with a brief interruption.

The site of this mine is represented as offering—what, indeed, the whole region has long been—a rich field of interest to mineralogiets. It abounds in magnesian and chrome minerals, yielding also beautiful specimens of emerald, nickel, pennine, kammererite, marmolite, &c.

The magnesian ore is found in horizontal veins in serpentine, some of which have been followed into the side of the hill nearly 100 yards.

HOLLOW BRICKS FOR HOUSES.



The accompanying engravirg is a section of one of Prince Albert's model lodging houses erected in Hyde Park, London, and the model of which is in the "Great Exhibition."—Always endeavoring to present to our readers that which we consider new and useful, and as these houses had been spoken of in terms of the highest praise by some of our countrymen who had visited them, we thought it would be interesting and at the same time advance art by presenting this view of the building. The hollow brick is the subject of a patent by a Mr. Roberts, as noticed by us in Vol. 4.

A A is a plan of the window and door jambs on alternate courses; C is a partition of brick; E, square jamb and chimney brick; F is a section of a wall; D is a section of chimney brick.

The advantages derivable from the use of hollow bricks are dryness and warmth, as well as economy of construction—considerations which recommend them as a preventive of the evils that result from the absorption of moisture by eommon bricks and other porous material.

They are adapted for houses of moderate height, but are not so strong as the solid brick, but their strength may be adapted to circumstances, and they are much stronger weight for weight.

When used for partitions, or for roof and floor arches, they are fire proof, deaden sound more effectually, and are considerably lighter than solid brickwork.

By the form adopted in the patent hollow brickwork, a perfect bond, running longitudinally through the centre of the wall, is secured; all headers and vertical joints, passing through it, are avoided; internal and external strength is obtained; and every facility given for the fixing of floor-plates, and other timbers; whilst, by the parallel longitudinal cavities, ample security for dryness is afforded, and great facility presented for ventilation, as well as for the conveyance of artificial heat, and for the transmisson of bellwires, and pipes.

Hollow bricks may be made, with any good tile machine, in the same manner as ordinary draining pipes, and at about the same cost in proportion to the quantity of clay contained in them. They are more compressed, require less drying, and with much less fuel are better burned than ordinary bricks, even when waste heat, or that in the upper part of the kiln, only is used.

The saving in brickwork effected by the use of the patent bricks, when made at a fair price, is said to be from 25 to 30 per cent. on their cost, with a reduction of 25 per cent. on the quantity of mortar, and a similar saving on the labor, when done by accustomed workmen. The process of drying is much more rapid than in the common brickwork, and the smoothness of the internal surface of walls built with the patent bonded bricks renders plastering in many instances quite unnecessary, whereby a further saving is effected not only in the first cost, but also in the subsequent maintenance. If glazed on the outer face, as may be done with many clays, a superior finished surface is attainable without plaster.

Errors in Printing.

Some hundred years ago a number of the Professors of the Edinburgh University attempted to publish a work which should be a perfect specimen of typographical accuracy. Every precaution was taken to secure the desired result. Six experienced proof readers were employed, who devoted hours to the reading of each page, and after it was thought to be perfect, it was pasted up in the hall of the University, with a notification that £50 would be paid to any person who could discover an error. Each page was suffered to remain two weeks in the place where it had been pasted, and the Professors thought that they had attained the object for which they had been striving. When the work was issued, it was discovered that several errors had been committed—one of which was in the first line of the first page.

Cast Iron Buildings.---Crystal Palace.

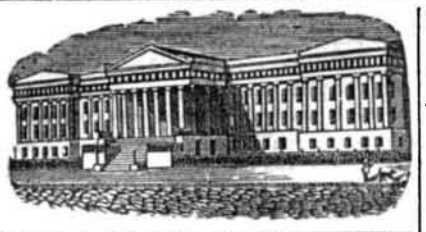
A correspondent of the National Intelligencer claims for our country the original conception and first development of the principles on which the crystal palace has been constructed. He awards the laurel to Mr. James Bogardus, of this city, and says his invention embraces three distinct ideas—"First, the application of cast iron for the purpose; next, the bolting together of the huge pieces composing the frame of the building, so that they will not only withstand any probable strain in any direction, but also, if perchance any one piece should fall, the stability of the rest will not be disturbed; and, lastly, the construction of all the joints much after the fashion of the joints of the ordinary cast-iron ten-plate stove; so that, while allowing for the contraction and expansion of his metal under all possible changes of temperature, whether from the cold of winter or from an accidental fire, his buildings shall not be objectionable on account of exposing their interior to the elements."

He also says, Mr. Bogardus visited Europe in 1836, and went to England in the hope of being able to interest capitalists of that country in his scheme. The subject was urged by him there in vain for a year or two; the British writers on mechanics generally concurring in the belief that he had mistaken the capacities of his metal.

The statement is also made that the scientific principles upon which the construction of cast-iron houses is based were applied for the first time in England in the construction of the Crystal Palace, and that the houses which had previously been built there are all wrought-iron, as are all the iron buildings so far put up on the Continent, as well as those which have been sent from Europe to California. The latter are joined and stayed on the principles applied in the construction of the steam-boiler, and cannot withstand the action of fire, as if made of cast metal; while they cannot be put together in a day, or be taken apart without destroying them.

Mr. Bogardus, no doubt, is one of the most ingenious men, and best mechanics the world has ever produced. We make this assertion unreservedly in all its length and breadth, but then instead of conferring honor upon our country, by undervaluing the claims of the inventors of other nations, it takes away from our honor and lowers our dignity. Mr. Paxton, we believe, is the sole inventor of the Great Exhibition Building, and a man of splendid intellect and ability. Mr. Bogardus erects the best cast-iron houses, we believe, in the world, but neither Mr. Bogardus nor Paxton were the first to use cast-iron in buildings, and the principles of erecting and securing cast-iron structures were known and carried into execution before either of these two eminent men came upon the business stage.

The great principles of cast-iron houses were developed long ago in cast iron bridges. Mr. Frost, of Brooklyn, built a cast iron bridge in England, 30 years ago, and the Southwark Bridge, London, was built about 1815, we believe, and is principally of cast-iron. It is a splendid structure of three arches, and is one fourth of a mile long. As to the material "cast-iron" never having been used in structures in England, before it was applied in the Crystal Palace; this is all nonsense. A small cast-iron lighthouse was erected in the city of Glasgow, by Claud Girdwood, in 1824, and it may be there still. An account of it can be found in the Glasgow Mechanics' Magazine. The Crystal Palace will go down to posterity as a diadem to the genius of Paxton, and the cast-iron houses of the United States will be enduring monuments to the genius of our Bogardus.



☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.
FOR THE WEEK ENDING JUNE 17, 1851.

To Mahlow Gregg, of Philadelphia, Pa., for improvement in Brick Machines.

I claim the rotating mould wheel, constructed as described, with a series of moulds in its periphery, and an annular plane outside of the moulds, and furnished with pistons arranged as described, for the purpose of discharging the bricks from the moulds, as set forth.

I also claim the mode herein described, of changing the position of the pistons by means of the bar attached to the horizontal presser, with its block and plate which are made to impinge upon the vertical plates, which are attached to the pistons for that purpose.

I also claim the combination of the hopper, horizontal presser, vertical presser, and hook rod, with the transverse horizontal lever and with the mould wheel; the whole being constructed and arranged in the manner and for the purposes described.

To H. W. Hayden, of Waterbury, Conn., for improvement in the construction of Dies.

I do not claim to be the first to construct a die with a lined surface, to deaden the metallic surface operated on, but I claim the application of a die, with a lined or corrugated surface, with the figure or pattern cut, or countersunk, so that the lined surface deadens the plate of polished metal, and leaves the polished surface of the figure untouched, for producing ornamental designs on polished metallic surfaces.

To Elias Young, of Cincinnati, Ohio, for improvement in Cooking Stoves.

I claim the cold air passages, substantially as arranged, to wit: having each an external aperture, near their upper part, on each side, beneath which projects a plate that carries the air to the centre of the stove, whence, by a second plate beneath the middle of the passage, it is again deflected to the outer ends of the passage, (thus counterbalancing the cooling effects at its entrance, whence it is distributed in hot blasts, to the fire.

To Wm. T. Barnes, of Buffalo, N. Y., for improvement in Wash Boards.

First, I claim fastening cloth, or its equivalent, on the board to prevent fine fabrics from slipping and from being torn or rubbed too much; but I do not claim lining the grooved washboard with india rubber, or other equivalent material.

Second, I claim hinging the washboard to the frame, for the purpose of holding the clothes while being washed, and at the same time allowing the board to be turned over, substantially as set forth.

To Ransom Cook, of Saratoga Springs, N. Y., for improvement in Augers.

I claim the form of the tips or cutting edges of boring implements, as described, that is, such tip commencing at the screw or centre point, and running nearly at right angles thereto, until about half way from the centre to the outer part of the boring implement, when it assumes a curve upwards, or towards the handle end of the instrument, which curve is continued until it is nearly semicircular, or until it turns within the periphery of the auger or bit, the curved edges being also under-cut or back-sloped, but without being confined to any particular angle of such back-sloping or under-cutting, as set forth.

To Rufus Ellis, of Northampton, Mass., (assignor to Wm. M. Chase, of Boston, Mass., for improvement in Knitting Machines.

I claim the arrangement of the needles in the plane of the endless belt, instead of at right angles to it, in combination with the arrangement of the driving pinion and the projecting joints, &c., of the links of the belt on the outside of the belt, the belt being supported, and the whole being applied to the stitch hook, yarn guide, and presser, and made to operate together, and with the work hanging on the inside of the belt, substantially as specified.

To Chas. F. Brown, of Warren, R. I., for improved connection of Telescopic Masts and Spars.

I claim connecting and adjusting the several joints of masts, yards, and all spars constructed of telescopic tubes, or tubes fitting one within another by means of a screwed rod or screwed rods (two), nuts, female screws, and set screws, or their equivalents; the whole being inserted in and secured or attached to the tubes, and operating in the manner substantially as set forth.

[This is the fourth patent secured to Mr. Brown through our agency, during the past year, all of which have been illustrated in the "Sci. Am."]

To Seymour Carver, of Geneva, Ill., for improvement in machines for Dressing Shingles.

I claim the arrangement of the head block with the springs, cams, the rollers, and stops, for the purpose of passing the shingles between and out from the cutting cylinders, in combination with the arrangement for depressing the upper cylinder, while in motion, for the purpose of giving a taper to the shingle; the whole combined and arranged as set forth.

To G. S. Griggs, of Roxbury, Mass., for improvement in Ventilators.

I claim a ventilator as herein described, composed of two series or sets of curved slats, arranged one within the other, and running from the edge of the flue or other orifice, to a small circle or plate over the centre of the same, the whole forming a conical or globe-shaped ventilator, the spaces between the several outer slats being protected by the inner slats, having spaces or apertures between the two sets of slats, the only openings to said apertures being in an oblique or sideways direction, all as set forth.

To W. O. Hickok, of Harrisburg, Pa., for improvement in Regulators for the pen beam in Ruling Machines.

I do not claim to be the inventor of the flexible hooked regulator, attached to the pen beam, but I claim the pieces in combination with the hinge joints, arranged and combined substantially as described.

I also claim the sliding piece, the bearings, and the finger wheel, in combination with the other pieces, uniting by hinge joints, or in any other manner substantially the same, using, in the construction of the whole machine, any material adapted to the purpose of forming, as described, a pen beam regulator for ruling machines.

To Chas. Anderson, of Warsaw, Pa., for improvements in Revolving Boilers.

I claim lining the inside of that part of a revolving boiler which comes in contact with the fire or heat, with wire gauze, or cloth, or any perforated or pervious metal work, in the manner and for the purposes substantially as described.

[See engraving in No. 34, this Vol. Sci. Am]

RE-ISSUES.

To Esther L. Larkin, Admx. of J. E. Larkin, deceased, of Ballston Spa, N. Y., for method of attaching augers to their handles. Originally patented Nov. 19, 1850.

I claim the handle made in two parts, one of which fits in a socket on the other, and carries a bolt screwed at its end, the said bolt passing through a hole in the auger shank, and screwing into a female screw, or nut, in the part on which is the socket, for the purpose of clasping or firmly holding the auger shank between the ends of the parts of the handle or stock, substantially in the manner described.

DESIGNS.

To J. G. Lamb, of Cincinnati, O., for two Designs for Stoves.

A bed of peat of the purest quality has been discovered within four miles of Saratoga, N. Y., covering about 60 acres. Excavations have been made to a great depth, without finding any bottom to the strata. It is said to be much cheaper and far superior to coal in its use for stoves or grates.

(For the Scientific American.)
Practical Remarks on Illuminating Gas.

[Continued from page 318.]

Air deprived of its oxygen, then, is unfit for respiration and cannot support combustion; therefore it becomes necessary to re-establish this important element, and remove the vitiated gases from the apartment; for this purpose a well arranged system of ventilation is highly important. By good management, any of the materials above enumerated, excepting tallow candles, can be burned without smoke; hence the products incidental to their combustion are not seen, nor are their effects immediately felt; they are therefore scarcely ever thought about, unless the apartment becomes over-heated and the atmosphere rendered insupportable.

The injurious effects and unpleasant sensations experienced in crowded or ill-ventilated rooms, is not so much caused by the heat, as the invisible gases which are evolved during combustion; for a high temperature can be borne without much inconvenience, provided the air be pure.

We have said that the products of combustion are alike, whether lamps, candles, or gas lights are used, but vary in quantity according to the relative proportions of light. This will explain why a gas burner, yielding light equal to twelve or fifteen candles, will warm a room more quickly than two or perhaps three candles; and this explains why the air in a room is heated, and otherwise unpleasant to the feelings, more quickly after gas lights are introduced than before. It must be known that the vitiated or deoxygenated air, together with the vapor and heated air, being lighter than the common atmospheric air in the room, ascends and collects in the upper part of the apartment, while the carbonic acid being of greater specific gravity than the air, descends and forms a strata at the lower part of the apartment, so that in order to ensure proper and thorough ventilation, openings should be made of ample capacity, according to the size of the room, and not only at the top of the apartment, whereby the impure air may escape but also at the bottom for the exit of the carbonic acic gas, which may accumulate in buildings tightly made; and where fire places are not used, a well arranged system of ventilation is highly important; and no system can be succeesful unless it provides for the altered circumstances at night, when shutters are closed, curtains are drawn, lights are introduced, and when a greater number of persons are assembled in the room than on ordinary occasions.

We are so much influenced by habit that it frequently usurps the authority of reason.

Thus, when the shutters are closed, the curtains drawn, the outside doors kept shut, and lights introduced—conditions which all conspire to make the room warmer than during the day, instead of letting the fire down, so as to accommodate it to these altered circumstances, it is generally trimmed afresh, and then—the room is overheated.

In the practical details of warming, lighting, and ventilating apartments, we can follow no safer guides than natural processes.

Suitable allowances must be made, and some modifications are requisite, on account of variable conditions. But the most simple, efficient, and economical plans for securing comfort and health within doors, are these founded on the plainest intimations of what takes place out of doors.

The following result of an experiment by Mr. Rutter gives the temperature at the expiration of each hour; at different distances from the floor, the experiment was performed with one gas light.

5 feet from floor		10 feet from floor.	
Commencement	62°	Commencement	64°
1st hour	64°	1st hour	70°
2nd "	66°	2nd "	74°
3rd "	68°	3rd "	77°
4th "	68°	4th "	78°
5th "	69°	5th "	78°
6th "	69°	6th "	78°

All the fittings such as pipes and cocks should be of the best materials and perfectly tight. Much injury is done by leakage.

GENERAL REMARKS.—Not unfrequently gas consumers remark that their bills for gas are exorbitant, and it is with difficulty they can be convinced they have consumed as much as the faithful little instrument, the meter, indicates. Many severe deprecations have been put upon this instrument, and severe epithets have been poured upon gas companies and their agents, by consumers who do not understand the principles of the meter, nor take the pains of informing themselves, and who do not exercise discretion in the consumption of gas. The ease with which this ever-ready light is obtained, is a great accessary to its wastefulness, for by the mere effort of the will, it can be increased or diminished; so simple a thing is it to turn a cock, that it is often done in haste and without thought, and if opened more than is necessary, large quantities escape, and if more gas escapes than there is oxygen enough to support its combustion, it passes off unconsumed, and therefore wasted.

The methods of burning illuminating gas have, up to the present time, commanded but little attention from the great portion of those persons who daily use it, and a few practical remarks relative to its economical consumption may not be unworthy of the reader's attention. Many different varieties of gas burners have been constructed in this country as well as in Europe, each claiming to possess advantages over prior inventions; those which have been most commonly adopted in this section of the country are the Argand, the Batswing, and the Fish-tail burners. The former is considered as the best of those enumerated, not only as regards its light-giving qualities, but also for its more perfect combustion of the gas; it gives a cylindrical flame similar to the lamp of the same name, the gas being supplied to it through a ring perforated with small holes about 1-32nd of an inch in diameter. It is surrounded by a glass chimney, which forms an essential appendage to this description of burner, its use being to create a draft and direct the current of air through the flame. The slight noise which is sometimes noticeable with these burners is caused by the rush of air, created by the draft through the chimney. If the flame of an argand burner is turned up high, the air which rushes through the interior of the ring becomes decomposed before it can reach the air on the top of the flame, which consequently burns in one undivided mass, the result of which is, the gas is only in part consumed, and carbon is deposited abundantly. If we shut out a portion of the air by partially closing the apertures in the burner, we sensibly increase the amount of light, but at the same time we subject ourselves to the risk of a greater loss, as well as the injury which may arise from smoke; for should the pressure in the street mains be increased by the extinguishment of a number of lights in the city, we should then find our burners smoking, because by shutting out the air by partially closing the apertures, we had deprived them of the necessary amount of oxygen which they required for complete combustion. One cubic foot of carburetted hydrogen gas requires for its proper combustion and conversion into carbonic acid and water ten cubic feet of atmospheric air; an argand burner, with the flame about 2½ inches in height, consumes 3½ cubic feet of gas in one hour, and therefore requires for its perfect combustion not less than 35 cubic feet of air. The Batswing and Fish-tail burners are used without glasses, and are well adapted for the use of manufacturing establishments, street illumination, &c. The former has a narrow cut or slot through which the gas issues, and the shape of the flame is flat, much resembling a bat's wing; the latter has two small holes, so constructed that the two jets of gas intersect each other near the orifices from whence they issue; the flame produced is flat and not unlike the tail of a fish. These burners require much less attention than the argand, and, comparatively speaking, but a limited quantity of gas can pass through them, which renders them very desirable in manufactories where they are regulated by inexperienced workmen.

(To be Continued.)

Three hundred new houses were built in a few days, on the blackened ashes of San Francisco. It takes the Americans.