O. D. MUNN.

# Scientific American.



MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

NO. 37 PARK ROW, NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN.

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied ratus for every club of the subscribers at \$3.20 each; additional copies at sume proportionate rate. Postage prepaid. ""Single copies of any desired number of the SUPPLEMENT sent to one aldress on receipt of 10 cents. Remit by postal order. Address

MUNN & CO., 37 Park Row, New York.

A. E. BEACH.

# The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, with handsome cover uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, postage paid, to subscribers. Single copies 19 cents. Sold by all news dealers throughout the country.

Combined Rates. - The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, postage free, on receipt of seven dollars. Both papers to one address or different addresses, as desired. The safest way to remit is by draft, postal order, or registered letter.

Address MUNN & CO., 37 Park Row, N. Y.

#### Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid perodical, issued once a month. Each number contains about one hundred arge quarter pages, profusely illustrated, embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information : (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. [37] Manufacturers and others who desire to secure foreign trade may have large, and handsomely displayed an-nouncements published in this edition at a very moderate cost. The SCIENTIFIC AMERICAN EXPORT Edition has a large guaranteed circu-

lation in all commercial places throughout the world. Address MUNN & C●., 37 Park Row, New York.



#### TABLE OF CONTENTS OF

#### THE SCIENTIFIC AMERICAN SUPPLEMENT

# No. 177.

# For the Week ending May 24, 1879.

 ENGINEERING AND MECHANICS.—Use of Compressed Air Motors for Street Cars. Continuation of Gen. H. Haupt's report. What grades the pneumatic motor can overcome, and what load it can carry. Effects of air compression. Advantages of pneumatic motors. How to remove jee and snow from the track on steep grades. A motor to supersede

of air compression. Advantages of portage and a moder to superscue horses. Collador's System of Compressed Air Brakes. 1 illustration. Colla-dor's claim that four-fifthe of the Westinghouse air brakes are em-braced in his patents of 1855. French system of Car Heating by Portable Hot Water Heaters. Sys-of the Orleans Railway. 7 figures. New Twin Cylinder Steam Engine. An engine on a novel and pecu-liar principle, designed by Mr. Joseph Biernays. Of London. Has no dead center. Cylinders upright. Compact. Full page Illustration. The Sharpie Model. By E. A. VAN and F. W. TUTLE, Oneida, N. Y. How to build and rig a Sharpie sail boat. First illustration, plan for construction, scale & inch to the foot 4 figures. Second illustration, elevation of Sharpie sail boat. Racing rig.

ASTRONOMY.-The Evening Star. An elaborate study of Yenus, By CAMILLE FLAMMARIAN. 1 figure. Showing the four principal phuses of the planet. Reasons for believing Venus to be climatically ill-adapted for comfortable habitation. Extreme changes of tempera-ture. Lofty mountains. Dense atmosphere. ilow earth looks from Venus Onche Minute Measurements of Modern Science. By ALFRED M. May Str. Article XIX. On the measurements of the lengths of the waves of light measurements of the undulatory theory of the light and the phenomena of diffraction and interference of hight. 2 figures. Table of wave lengths of principal Fraundoff lines. Ruther-furd's ruling engine. How diffraction gratings are made.

## THE MENTAL REQUIREMENTS OF MODERN ENTERPRISES.

Formerly the art of war, statecraft, the bar, the pulpit, poetry, and philosophy monopolized the brains of mankind. force found expression for their thoughts; and besides these, ity of his self-imposed task. there were few occupations likely to invite or to develop cial, constructive, manufacturing, agricultural, and the like -have well nigh reversed the old state of things. The learned professions, so-called, no longer offer the only nor even the most inviting fields for intellectual effort; nor do they furnish the most effective means of mental development and culture. As an inevitable result, professional men no longer overtop their fellows in intellectual stature. Indeed it is sometimes asserted that the highest order of minds are now drawn to practical affairs, leaving to the professions only those of inferior rank. Relatively this may be largely true; yet it by no meansfollows that the leading men of to-day in the purely they are surrounded by non-professional men of a mental stature impossible in former times; and so, although really great, they seem relatively small. Many a soldier, statesman, historic greatness rather to the littleness of his neighbors than to his own intrinsic nobility.

Speaking of the requirements of modern transportation, Prof. David Swing remarks that men are giving to railways now a mind which travel and carriage could never have thus diverted from learned pursuits when men journeyed on horseback or carried goods in pack saddles. In those days only a few boys who could feed horses, and a few drivers who could flourish a whip, were absorbed by the carrying business. The railway, with the pomp and circumstance of its engines and palace cars, its vast machinery and money power, now attracts and employs men who would have been Pascals and Newtons, and Wesleys and Washingtons a hundred years have had no counterpart in the days of the pack-horse; and ever plucky or enduring, were not trivial in comparison? as a consequence we must admit that "the steam cardiverts great brains, and places upon the railway throne men who would once have been princes in statesmanship, or literature, or religion."

the objection is ready that perhaps the railway is making men of large brains out of those who would have been only teamsters in the mountains or sleepy drivers along a canal. This objection is indeed valid; but after you have estimated the modern material pursuits are so immense and attractive, of high statesmanship, or high thought, or into a broad and powerful pulpit."

The underlying sentiment of this complaint seems to be a vague and unreasonable fear that just so far as practical af thinking, statesmanship and philosophy and religion, and all uses, the other purely intellectual pursuits, will be robbed of their supply of superior men. If the mental force of the race invention or transportation or other material pursuit must of necessity be diverted from statecraft, philosophy, or literature, there might be some ground for complaint-provided it were certain that invention and productive industry were less beneficial to the race than a correspondingly high order of closet thinking. But the mental force of a people is not a fixed quantity; and instead of diminishing the supply for any particular calling, every new calling which invites or develops a higher order of intellectual power or executive capursuits, ultimately if not immediately.

mon intellectual average of men of affairs is higher than it of the gas lighting in Paris. used to be. To manage properly a great railway, steamship How far a report by the electric company would modify

Orleans. The Ohio was full of ice when he started, and the venturesome swimmer was often in imminent peril from being crushed in the ice floes as well as frozen by the intense cold. The voyage of 2,342 miles was completed in 80 days, In these professions and pursuits men of superior mental the voyager being reduced almost to a skeleton by the sever-

Of a very different nature was the splendid feat of the the higher order of minds. The magnitude, complexity, and Sugar Notch coal miners, who, to rescue seven comradesscientific character of modern material enterprises-commer- six men and a boy-buried in a mine, accomplished the great work of driving and timbering a passage way of 1,200 feet through rock and coal, mostly rock, in the brief space of four days and nights. The imprisoned miners were found alive and well, notwithstanding their confinement of five and a half days. The party had been shut in by the falling of some acres of mine roof, caused, it is said, by a reckless stripping of the supporting pillars of coal; and luckily the door boy, who had gone in to warn the miners of their danger when the roof began to give way, rode a mule, which the men killed and ate after they found they could not get out. There was plenty of pure water in the mine, and, intellectual callings are in any way inferior to the average of though gas accumulated somewhat in places, a spot was their predecessors. They are tried by a higher standard; found where the air was fairly good and it was safe to build a small fire for cooking their mule meat.

It must not be forgotten that the noble band of rescuers toiled with slender hope of finding their buried comrades jurist priest, or writer, vastly famous in his day, owes his alive. If the latter had not been crushed by the falling roof or drowned by water, there was a strong probability that they had perished by the fire which broke out in the mine when the roof fell, or had been smothered by the liberated gases of the coal. Yet the bare possibility of saving life urged the generous toilers on, and happily their efforts were rewarded by the highest success.

The men who planned and cut the relief drift were not surrounded in their labors by admiring crowds, like the contestants for pedestrian honors; they had not the almost daily "grand receptions," "ovations," and the like which gave the river swimmer an abundance of noisy notoriety and substantial encouragement. They were probably unconscious of doing anything specially commendable; anything more ago. The external management of the railway has created, than any miner would do for a comrade in distress. Yet who he says, the "railway king" of to-day, who had and could will say that the achievements of Brown or Boyton, how-

#### ---THE ELECTRIC LIGHT IN PARIS.

The application of the General Electric Light Company for a three years' concession of the lighting of a number "Of course," remarks Professor Swing, "to this statement of public ways in Paris was rejected by the Municipal Council, January 28; and it was decided, at the same time, that the city should no longer contribute pecuniarily or otherwise to the experiments of the company. The reasons for this decision are, in brief, the practical failure of it at its full worth, the feeling will yet remain that many of the electric light to meet the wants of public lighting steadily, efficiently, and economically. In their report the Counthat they are actually drawing away a brain power which in cil express the conviction that electric lighting is still in a peother circumstances might have found its way into the field riod of trials and tentative processes, especially as to the regularity of its working. The frequent number of extinctions and their duration require the maintenance of gas apparatus concurrently with the electric apparatus, thus complicating matters and increasing expense. Finally, the high cost of fairs call for and develop mental force and a high quality of electric lighting does not allow of its adoption for public

Very naturally the City Gas Company is much elated at the failure of what threatened to be a serious rival. In the were a fixed quantity, and every great mind employed upon annual report of the Council of Administration of the company, presented March 27, it is asserted that the electric light was unequal in intensity and color; in foggy weather its brilliancy diminished with distance much more rapidly than gaslight; and its sudden and frequent extinction made it incompatible with the requirements of a service so important as public lighting. This everybody knew; but not so many were aware that in the Avenue de l'Opera a steam engine of twenty horse power was necessary to supply the electric centers extending along 360 meters, and that the application of pacity practically increases the mental force available for all electric lighting to the 1,800 kilometers of the streets of Paris, at present lit by gas, would require a motive force of 100,000 The circumstance that our preachers and politicians do not horses, more than double the power employed in all the intower above the rest of men as they used to is no evidence dustries of the departments of the Scine and Seine-et-Oise that they are intellectually inferior, but rather that the com- united; and the street lighting represents only the ninth part

line. manufactory, or to devise and develop a novel and use- these assertions we do not pretend to say. Obviously, howful industry, often calls for a wider range of knowledge, a ever, up to this stage of the contest the victory rests with

III. PHYSICS. - A New Theory of Terrestrial Magnetism. By Professors PERRY and AYRTON. This theor makes the earth's magnetism de-pend solely upon the earth's dally rotation. Siebert's Projectilevelocimeter. Measures the velocity of projectiles thrown by frearms, and also the pressure exerted on the both on of the gun and the distance traversed during the recoil 3 illustrations. The same instrument may be used to determine the velocity of engine pistons, drop hammers, etc.

IV. TECHNOLOGY.—The Inoxidation of Iron, and the Coating of Metals and other Surfaces with Platinum. By the processes of Mons. DODE. A paper read before the Society of Arts, London. by L. M. STOFFEL, C. E. with discussion by members. A possible substitute for galvaniz-ing, annealing, and nickel plating. Cost about that of three coats of paint, or one-tenththat of nickel plating. Comparison of Barff's pro-cess.

ess. Slate Quarries of Monson. Maine. An extended account of the most romising slate quarries in the world. The superior quality of A meri-an slate and how the quarrying is conducted. Gambagy of the slate ess. peculiarities, purity, uses of slate. Foreign demand for Monson late.

The Vino-Colorimeter. A new method of testing and comparing the colors of wines, 4 illustrations.

V. AGRICULTURE, FOREST CULTURE, ETC.-France. Cork oak. Sweden and Denmark, Portugal and Spain. Our own forests. "Arbor Day." New Way to Sow Grain. as practiced in California. Aberdeen Cattle Exhibited at Paris. Large illustration of prize cat-

Aberdeen Carrie Samone -tle. Alligator Perfume. Musk glands and secretions.

# THREE SUCCESSFUL EFFORTS.

Three notable feats of human effort and endurance have

just been brought to successful issue. The first was of We recently published an account of the Barff process of questionable utility in spite of the possible advantage of preserving iron by forming upon its surface an enamel of knowing the maximum capacity of the human frame for iron oxide by means of superheated steam and a high temlong-continued and severe exertion. In the six days' walk- perature.

ing and running match, in London, ending April 26, the We have now to describe another process, discovered by winner's score was 542 miles, beating by 21 miles the best M. Dodé, by which iron is not only preserved from rust, but previous record in a similar contest. During the first three its surface may be ornamented, so as to resemble gold or sildays the winner, Brown, made 300 miles, a feat never be- ver, all at a comparatively small expense.

fore achieved. It is said that he left the track at the close In the Dodé process the iron article, cast or wrought, is in excellent physical condition. first dried, and then dipped in or painted with a composition

The second achievement was also of doubtful utility. As of borate of lead, oxide of copper, and spirits of turpentine, a means of advertising his already sufficiently advertised which soon dries on the surface of the article. The objects swimming suit, designed for life saving in case of disaster are then passed through a furnace and heated to cherry red, at sea, Capt. Paul Boyton undertook last winter the terri- the highest temperature being from 500° to 700° F. At this ble task of floating and paddling from Pittsburg to New heat the metallic pigment fuses, enters the pores of the iron,

NEW PROCESS FOR PRESERVING AND ORNAMENTING IRON.

and becomes homogeneously adherent thereto. Iron articles superior as a preservative to galvanizing, while the cost is Assuming it possible to travel at the rate of 15° an hour, so rosy. estimated at only half a cent per superficial square foot. as to make the circuit of the world in twenty-four hours, we This coating is of dark color.

processes, which give ornamentation to the article, may be time of starting is, say, noon, January 1, and each is proadded as follows: After the iron has been treated as just described, it may be enameled, so as to have a smooth polished surface, by painting it with a compound made of borate of lead, litharge, and essence of lavender. An extensive variety | hours by the clock. of colored enamels, of great durability and fine polish, may thus be produced. The cost is two to three cents per superficial square foot.

When an ornamental surface resembling dull silver is wanted, the iron article, after having been treated by the process first above described, is now painted with a mixture of sun and by the clock, the three men compare their reckonthen again heated to 350° to 400° Fah., whereby the platinum becomes incorporated with the inoxidated surfaces, and a firm, durable, and excellent dull silvered appearance is attained. The cost of this last process is stated to be from three to six cents per superficial square foot.

of the enamel, before mentioned, are first given, and an increased quantity of the platinum solution is used.

A golden surface, instead of silver, may be obtained by preparing a compound in which chloride of gold instead of platinum is used.

A paper on this discovery was lately read before the Socicty of Arts, London, followed by a very interesting discussion, all of which are given at length in our SUPPLEMENT for the current week, No. 177. Many splendid specimens of iron articles treated by the process were at the same time submitted for inspection.

# WHO ORIGINATED THE ATLANTIC CABLE ?

The recent cable celebration has called out a claim for the late Col. John Henry Sherburne, of Washington, D. C., as deserving the honor of originating occan telegraphy. The in other words, his date by sun reckoning will be noon, De claim is based on the following entry in the journal of the comber 31, the year of starting. Senate of the United States Senate for the second session of the XXXth Congress. to wit: "Monday, January 28, 1849. The Vice President presented the memorial of John Henry the clock, and his date, by sun reckoning, will be noon, Jan-Sherburne and Horatio Hubbell, praying the aid of Government in the establishment of a telegraphic communication across the Atlantic Ocean, which was referred to the Committee of Commerce.'

In the memorial referred to the geographical points are indicated from which the communication can be most conveniently made between Newfoundland and Ireland. the distances given, the probable existence of soundings quite across suggested, or the possibility of anchoring buoys without soundings, and the apparatus necessary to effect the design.

The sudden death of Colonel Sherburne is claimed, by his son, to have prevented the carrying out of his father's favorite project.

The right of Cyrus W. Field to the honor of inaugurating the first Atlantic cable does not seem to be in any way lessened by the earlier project of Colonel Sherburne and Mr. Hubbell. The idea of ocean telegraphy was not original mals. with either. As early as 1842, Professor Morse telegraphed through insulated wire, a submarine cable, stretched between Castle Garden and Governor's Island. And with reproject will be realized."

Possibly, if Colonel Sherburne had lived, he, and not Mr. proposed-and died. Mr. Field proposed, and happily lived to see his plans succeed. ----

# THE WORLD-CIRCUIT AND TIME PUZZLE.

will consider the cases of A, B, and C, the first going westvided with an accurate calendar clock.

At noon, January 1, A starts on his journey, travels with the sun, and makes the circuit of the world in twenty-four

rate (15° an hour), and completes his journey in twenty-four any consequence. hours by the clock.

C remains at home.

When it is noon, January 2, by C's reckoning, both by the noon, January 2. During the preceding twenty-four hours, however, the sun, to A, has been steadily at the meridian. and utterly useless as an indicator of time movement. A has seen neither sunrise nor sunset, and in comparison with C's sun reckoning, he has missed one sunrise, and has accord-When a highly polished silver surface is wanted, two coats | ingly lost one day. Meantime B has seen the sunrise twice, once more than C, and twice more than A. By sun reckoning, therefore, A and B are two days apart.

Suppose the time of the journey prolonged to a year of 365 days, the calendar clocks not being interfered with. Obviously all three clocks will register the same absolute duration, starting.

Assuming A's progress westward to be uniform, he must, by the direction of his travel, lengthen each day (in other words, put back sunrise) nearly four minutes, the aggregate for the year making one whole day; and of course, if his such circumstances. speed is variable, that would be the average gain-that is, to each day's length, making the aggregate number of days for the year one less than if he had stood still. As a consequence, he will see the sunrise but 364 times in 365 days by the clock; Universal Postal Union and the recent act of Congress. On

The days of B, on the other hand, will be similarly shortened. He will see the sun rise 366 times in 365 days by uary 2, the year after starting.

Thus, reckoning by sunrises, A will be one day behind C, and B one day ahead of C. The reckoning of A and B will, therefore differ by two full days.

Since the meridian of 180° E. or W. of Greenwich falls in mid Pacific, touching no land of consequence, it is usually chosen as the line for time correction, the day lost or gained being there added or dropped, as the case may require.

#### PROF. BERT'S NEW ANÆSTHETIC.

Not long since we called attention to an important paper read by M. Paul Bert before the French Academy, and in which the author suggested the benefits to be derived in surgical operations from the use of nitrous oxide as an anæs-

recently been made in Paris, and has proved so successful in 'reality mind-training, or "brain-building by hand." Mr. every respect that it deserves to be made known in all its de- Chaney argued that special trade schools should be mainference to later investigations, Professor Morse wrote in a tails. The experiment, according to the Paris correspondent tained by manufactories, for which the public school trainletter to the Secretary of the United States Treasury, under of the Lancet, was performed on the 13th of February, in the ing should be a preparation. The work of the Industrial the date of August 10, 1843, these memorable words: "The "Acropathic" establishment of Dr. Daupley, Rue Males- School Association in Boston was alluded to as an example practical inference from the law just elucidated is that a herbes. Dr. Labbé, surgeon to Lariboisière Hospital, was to of what might be accomplished in the manipulation of tools telegraphic communication on my plan may with cer- operate on a young woman of twenty for in-growing nail; common to all the trades. tainty be established across the Atlantic! Startling as this and M. Préterre, who has great experience in the use of nistatement may now seem, the time will come when the trous oxide, was to apply the gas. The other persons present were Prof. Paul Bert, and MM. Reynard, Laffont, and Blanchard. At 11 o'clock the party entered the large compressing Field, would have been the founder of the first Atlantic bell of the establishment, and the patient reclined on some Telegraph Company. Possibly also he might have fought mattresses on the floor. At ten minutes pasteleven the press- simply a peroxide of iron, and exceedingly sensitive to the enterprise through to successful issue. This, however, ure had increased to 17 centimeters without any of the party oxygen. Hence, on slight exposure to the atmosphere, it is a question of fact, not of possibilities. Col. Sherburne having experienced any discomfort, except some noises in the unites with the oxygen of the latter, forming a solid oxide. ears and a feeling of tension in the membrana tympani, but He suggests the following formula as one not generally which were easily removed by a movement of deglutition. known for an antidote to arsenic, and claims for it prece-At this moment M. Préterre applied to the patient's nose and dence over all others; first, because it forms the surest antimouth the apparatus which he is in the habit of using, and dote; and second, because the ingredients are always readily The everlasting problem of the two men traveling in op- which communicated with a large bag containing 120 liters of accessible, even to the country physician who carries saddle his favorite newspaper for a decision. The number of such then leisurely performed the operation, during which the ture almost ad libitum. It is a perfect antidote to arsenic. communications coming to the office of the SCIENTIFIC patient never gave a single sign of pain or reflex action. Her AMERICAN is in one sense highly gratifying, in that it shows eyes were shut and insensitive, the pupils slightly contracted. no small percentage of the youth of the country to be among About the fourth minute, as Dr. Labbé was beginning the its friends. Nevertheless the incessant repetition of even an idressing, there were a few contractions of the hands and feet; interesting question becomes monotonous in the course of but this was all, and, as the operation was now over, the ap-It was then fifteen minutes past eleven. The contractions vard." ing of disputation, the question may properly be taken out ceased, and the patient remained motionless and asleep for of the department of "Notes and Queries," and considered half a minute. She then complained of pain in her toe, and cried a little. Less than a minute afterward she sat up, and declared she had felt nothing during her sleep, but that (to circumstance that it involves two different ways of noting use her own words) "she had gone to heaven, and had seen time-by sunrises, and by actual duration as measured by the everything blue with stars." She declared she felt no pain, except slight headache, to which she is subject. Nothing a Fellow of the Royal Astronomical Society of England, as could be more striking than this calm and quiet awakening, a token of appreciation of his astronomical discoveries.

Sometimes the journey is supposed to be made in one day; compared with that which follows chloroform. Her pulse so heated are rendered impervious to rust. The process is at others a year is allowed. Let us begin with the first case. had been constantly calm, and her complexion natural and

The following technical figures given by Prof. Bert are of scientific interest: The depression commenced at 11:15 The above is the foundation process, after which other ward, the second eastward, the third remaining at home. The o'clock, and ended at 11:19. The total pressure having ascended to 75 c. + 17 c. = 92 c. The tension of the nitrous oxide was expressed thus:  $85 \times \frac{92}{75} = 104$ , or, in other words, was slightly above that of pure nitrous oxide breathed in the open air under normal tension. The tension of the oxygen was  $15 \times \frac{92}{75} = 18.4$ , or, in other words, slightly below that of B, starting at the same instant, travels eastward at the same ordinary air (20.9). But the difference is too slight to be of

This experiment has successfully shown that Prof. Bert's mixture, which does not produce any anæsthetic phenomenon under ordinary pressure, has the effect when applied under tension of producing complete insensibility. Prof. Bert, dry chloride of platinum dissolved in ether. The article is ings. Obviously the three clocks will agree in indicating therefore, claims for the new anæsthetic that its application is simple, that it is easily dosed, that it is perfectly harmless, and that it is not preceded by a period of excitement, or followed by the stage of reaction.

### The Microphone in Mine Disasters.

The buried miners at Sugar Notch tried very hard, by pounding on the walls and doors of their rocky prison, to let their friends outside know they were alive, but did not succeed. The question is raised whether the long and distressing uncertainty as to their fate might not have been relieved had a microphone been employed. Also whether it would and stand, at noon, January 1, one year later than the time of not he possible to devise and make known to all workers underground a simple code of microphonic signals, to be communicated by rapping and heard by means of the microphone, whereby some sort of intercourse might be kept up between those without and those within a mine under ----

#### International Postal Cards.

The Post Office Department has approved a design for the new international two cent postal card provided for by the the upper left corner are the words "Universal Postal Union, United States of America," in English and French, the Postal Union requiring that the inscription shall be in the language of the country from which the card is sent and in French. On the right upper corner is the stamp, consisting of the head of Liberty copied from the gold double eagle, surrounded by a ribbon border, with a monogram "U. S." at the top and a buckle at the bottom with the figure "2" in octagon blocks on either side. In the upper half of the circle are the words "postal card," and in the lower half "two cents." The card has also, to more clearly define it from the ordinary one cent card, a neat border around the edge on the address side.

#### ----Hand-Training in Education.

In a paper on hand-training in the public schools read before a Massachusetts County Teaching Association, the reader, Rev. G. L. Chaney, laid special emphasis on the need of giving public school children the proper bias tothetic, when combined with oxygen and administered under ward, not against, manual labor. At present children are tension. M. Bert's conclusions were drawn solely from ex-<sup>1</sup> taught in such a way that they look down upon manual periments that had been made by him on the inferior ani-labor. Education should not thus be prejudicial to the laboring interests of the country. Industrial education is ab-The first trial of the new anæsthetic on a human being has solutely necessary for us as a people. Hand-training is in

# Antidote to Arsenic.

Dr. James B. McCaw, according to the Canadian Journal of Medical Science, remarks that dialyzed iron (which has recently been recommended as an antidote to arsenic) is

years. In the hope of setting the matter at rest for a little paratus was removed. while, to the saving of time and correspondence, to say nothat greater length than would be possible there.

The great trouble with the question clearly arises from the clock-while those who attempt its solution do not always keep the two ideas of time distinct and separate.

posite directions around the world and meeting to find their the following mixture: Nitrous oxide, 85 parts; oxygen, 15 bags: Tincture of chloride of iron, one drachm; bicarbotime reckoning at variance, must be the source of much rev- parts. After a few seconds of hesitation the patient began | nate of soda (or potash), one drachm; tepid water, a teaenue to the postal department. Sooner or later every youth to breathe deeply, and in about a quarter of a minute insen- cupful. Mix. The sesquioxide of iron is immediately falls foul of it, and, getting into a dispute over it, appeals to sibility and muscular relaxation were complete. Dr. Labbé formed in a solution of chloride of sodium. Give this mix-

# American Coal in Switzerland.

The Continental and Swiss Times, published in Geneva, contains the following suggestive advertisement:

"American anthracite coal for sale at 50 francs per 1,000 kilos. Carriage free. Apply J. Lafond, 10 Ruc Boni-

If American coal can be sold at a profit in Geneva, we see no reason why a more advantageous market may not be found at Marseilles and other ports on the Mediterranean, thus furnishing an opening for another of our products.

PROFESSOR LEWIS SWIFT, of Rochester, has been elected