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Contonto

Contents.		
(Illustrated articles are marked with an asterisk.)		
Air drafts in mining shafts (16) 138) Leather-dressing machine * 1	34	
Air vessels on pumps (16) 138 Lining out connecting rods * 1	33	
Anglagmated gince (50) 139 Magnetic variation the (29) 15	38	
American potatoes abroad 130 Magnets, constructing (24) 13	38	
Ancient implements 136 Man's work, a 1	28	
Animals, biblical 136 Man, the coming 136 Man, the coming	28	
Answers to correspondents ^ 138 Machanism practical #	294 200	
Bacteria and nitrites in water 127 Medicament. a new	32	
Bank vauits, protecting 129 Mess, Irish, adhesive (63) 13	39	
Barber's apparatus, new * 131 Mushrooms, a neglected industry, 12	39	
Battery for telegraph (46) 135 Nalls, Cut (5)	20 1	
Bleaching glue (54) 139 Oil resources of Africa 12	8	
Blowpipe, new form of* 131 Patent decisions, recent 13	37	
Boller explosion, destructive 152 l'atents, American and foreign. 152 l'atents, American and foreign. 154 Patents, juit of Canadian	56	
Boilers, iron and steel (10), 138 Patents, official list of	Ň	
Bricks, waterproof (20) 138 Patterns. thickening (67) 13	39	
Business and personal 138 Photographing the invisible (57), 13	39	
Butter industry the artificial 186 Plate chapting machine * 19	\$3 29	
Cat family, the an one and the latter is the content of the pressing (65)	ŝ	
Cement for rust joints (8) 138 Pressure and gages (6) 13	38	
Central Park, curiosities at 136 Pulleys, speeding (13)	88	
Charcoal, wood for	27	
Cider, clarifying (61) 139 Pumps, rotary, continuous (9) 13	8	
Clock, a huge 133 Quicksilver, American	3	
Cores Dlumbago (4) 138 Regines useful 13	3	
Cosina 130 Refrigerator wanted, cheap 13	12	
Edison's experiments, Mr. (32) 139 Rheumatism recipes 13	4	
Electric denosits preventing (51) 139 Roofs, elliptic (34)	20	
Engines for boats, etc. (39, 40) 139 Rubber, dissolving (60)	٥,	
Engine, vacuum in an (64) 139 Scientific American in the pulpit. 13	1	
Erie canal, second channel for the 132 Sea lions, the	54	
Feed water purifier *	8	
Felting for steam pipes (12) 138 Soap, hard (58) 13	39	
Finishing black ash (33) 139 Soap, poetical	37	
Figure Right Solar phone for the second seco	á	
Fleas, educating,	8	
Float, constructing a (42) 139 Stone, durable red (31) 13	9	
Gages, wire, etc. (17)	8	
Geranium, a wild *		
Grindstones. speed of (21) 138 Valves, bushing for (35) 13	39	
Hanging investigations	9	
Hardening plow moleoparts (1) 138 water for boners (6)	28	
Heat, radiant, as a motor 135 Waterproofing wood (55) 13	ŝ	
Hydrochloric hydrate, new 130 Water regulator, etc. * 13	34	
Ice nouse, making an (53)	51 122	
Ink. making (56)	38	
Insecticide, a new 134 Wells, bored or driven 13	32	
Iron, breaking strains of * (66) 139 Wells, driven (52) 18 Kangaroog in France	32	
Kerosene stains (59)	38	
Contents.(Illustrated articles are marked with an asterisk.)Alt drafts in mining shafts (16) 13% [Leather dressing machine *	31	
Lantern galvanometer, new 129 Zoëlogical gardens, the 13	36	
Lathing machine * 131		

THE SCIENTIFIC AMERICAN SUPPLEMENT, No. 9. đ

For the Week ending February 26,1876.

TABLE OF CONTENTS.

- TABLE OF CONTENTS.
 I. THE INTERNATIONAL EXHIBITION OF 1876. With 2 engravings. General View of the Situation. –Sunday at the Centennial. –English Porcelain for the Exhibition. –Boreas Visits the Grounds. –Exhibition Notes. –Indiana State Buildings at the Centennial, 2 engravings, ele-vation and plan. –Great Britain at the Centennial.
 I. MECHANICS AND ENGINEERING. With 15 engravings. –Pumping Machinery for the Ferrara Marshes. 4 engravings. –Drainageof the Zuy-der Zee. –Steel in Construction. –Defences of London. –New Engre for Twin Screws. 1 engraving. –The Dynograph. –Roll Welding for Steel-Edged Cutters, 6 fags. –Steam in Petroleum Wells. 2 fags. –Safety Device for fkallway Cars, 2 fags. –The London and North Western Railway. New Railway in Connecticut. Union Pacific Railway.
 II. PROCEEDINGS OF SOCIETIES. –Physical Society, London. –An-
- III. PROCEEDINGS OF SOCIETIES.-Physical Society, London.-An-thropological Institute.
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WHAT THE COMING MAN MAY BE. Clever writers have frequently amused themselves and their readers by forecasting the future, and prognosticating

the condition of humanity centuries hence. They have materialized, so to speak, the dreams of to-day, and pictured human life as it might be were those dreams fulfilled. In all these Utopias, however, the people, though better morally, more happy socially, more fortunate politically, and more powerful through easily predicted increase of knowledge, are yet substantially the same as the people of the present. It is assumed, apparently, that the future progress of man is to be measured by changes in his condition, not by changes in himself: that, supposing progress to go on in the future as in the past, the men of 5876 will differ from us in their personal development.

A writer of sufficient knowledge and liveliness of imagin. ation might plan a more marvelous and, it is hardly too much to say, more probable Utopia from the standpoint of psychical rather than material development, picturing a time when the average man will be intellectually as superior to us as we are superior to the less developed man of five thousand years ago. That there has been a similar increase of human brain power during the past few thousand years is as certain as that there was a steady increase of brain bulk throughout the animal kingdom during the geological ages just preceding; and there is no physiological or other reason for believing that man may not go on perpetually increasing in mental power.

Measure the intellectual gulf between the Australian save age, barely able to count his fingers and having no numerals above two, and a Newton or a La Place, or even the average man of to-day: then suppose the whole race advanced an equal interval. Imagine a race of men so intellectual that the average man would be a Michael Angelo! The basis for such an estimate of the powers of the coming man is found, strange to say, in certain idiots.

Idiocy is commonly marked by the non-development of the physical powers, but sometimes by the non develop ment of all but one, in which cases a single faculty appears to receive the whole of the force evolved, and to develop enormously at the expense of all the rest. Thus we may account for the marvelous power in one direction shown by idiotic prodigies like Blind Tom, whose psychical power is wholly musical. The idiot painter known as Cat Raphael illustrates the same perversion of force in another direction. He drew and painted cats and kittens of every sort, shape, and shade, in every possible position and condition, and painted them wonderfully well, yet could do nothing else. In like manner we have calculating idiots, able to make the most elaborate calculations almost instantly but utterly unable to explain the mental operations involved. Other idiots, without reference to clock or watch, and without conception of the object or meaning of divisions of time, are able to tell the hour and minute at any time, night or day. Still others show an extraordinary development of verbal memory, unaccompanied by other mental power. Though unable to read or to understand the meaning of many words, they will re peat by sound hundreds of verses, lists of words, everything, in short, that they may hear. Then there are historical pro digies, who, though ignorant of history in any just sense, can give the date of every great battle or other event, repeating them as isolated facts, devoid of interest and meaning Similarly there are mechanical idiots, or rather mechanical gen iuses who are idiots in all other directions. A few years ago there was exhibited in England a beautiful model of a snip, pronounced by competent judges to be a perfect specimen of naval architecture, every detail being proportioned and finished with the nicest exactness. It was made by the imbecile son of a gardener in an interior county. Up to that time, it is claimed, he had never seen the sea or a ship, his pattern being a printed ship on an old pocket handkerchief. When his work was nearly finished, he visited a dockyard, and made a few changes in his work. Four years were spent on this, his second attempt at shipbuilding, his first having failed through ignorance of the fact that wood could be bent after immersion in hot water, a trick which he is said to have discovered by himself. He was taught to copy drawings, which he did with surprising exactness; yet after all, at the age of twenty-four he was described as a small headed, large pupilled idiot. So we might go over the whole list of human faculties, finding illustrations of enormous developments of each combined with the total lack or non-development of all other mental powers. The entire force of such individuals

seems. as we said, to be turned into a single channel. Imagine an organism capable of sending an equal

consider, and to which every employer of men for the sake of their brute muscular strength is obliged to give some attention. It is a common error to believe that, in order to produce a given amount of work, a man always expends a given amount of power, and to recognize this is the first step toward a correct estimation of a man's muscular capability. Appropriate rests are absolute necessities to the human machine, and it is by intermittent, not continuous, effort that its best work is produced. One man laboring ten hours and taking intervals of repose will produce more force and accomplish more work with less fatigue than another laboring eight hours with shorter or less frequent rests, the actual time spent in working in both cases being equal. But on the other hand, during the periods of absolute work regularity is a necessity, a fact clearly shown by the government of soldiers on long marches, where the drum to which the feet keep time is a wonderful agent for repressing fatigue, simply because it ensures regularity of motion. So also in rowing in a long race experience has proved the advantage of a clockwork regularity of stroke with a brief breathing spell between each pull. In fact it appears that men will naturally fall into this cadence, as witness the blows delivered by laborers with sledge hammers upon rock drills, and the peculiar timed "hup" which each will aspirate as his implement falls, or the tendency which sailors have to break into a cadenced singsong when pulling a standing haul on a rope. A more curious instance in this same regard is found in the power of dancing; nothing but the repeated rests and the regular movements will explain the ability of women, to whom ordinarily a walk of a mile in length is a severe task, to dance during a period of five or six hours, and this at a time when Nature is most exhausted, owing to deprivation of sleep.

The best application a man can make of his power is through his legs, for the muscles of those members are not only absolutely but relatively stronger than those of the arms. In other words, after work, the fatigue produced in both sets of muscles being equal, the leg muscles will have performed more useful labor than those of the arms. And further, the nearer we imitate a natural movement the better do we apply the power, therefore a walking motion of the legs, at a velocity equal to that of an ordinary gait, and applied to levers, is probably the most efficacious application of human force for steady work.

As to the absolute power of a man, expressed in pounds to be lifted or in similar terms, exact data are obviously impos sible, even foran average individual. An interesting series. of experiments were conducted on this subject some time ago in France, and these, we believe, give a fair approximation. The heaviest load a man of strength can carry for a short distance is placed at 319 pounds. All a man can carry habitually—as a soldier his knapsack—walking on level ground is. 132 pounds, and this is an extreme load, we should judge. Or he can carry an aggregate of 1,518 pounds over 3,200 feet. as a day's work, under like circumstances. If he ascend ladders or stairs-as do hod carriers-then he can carry but 121 pounds continuously, and his day's work cannot exceed 1,232: pounds raised 3,200 feet high. With regard to the effort and the velocity which a man can produce by pulling or pushing with his arms, it has been found that, under the most favorable circumstances and for continuous work, an effect exceeding from 26.4 to 33 pounds raised from 1.8 to 2.1 feet per second cannot be gained, and this is equal to about $\frac{1}{6}$ horse power.

THE OIL RESOURCES OF AFRICA.

It is hardly possible to study the progress which has been made during late years, in the art of utilization of previously wasted substances, without being impressed with the anomalous course which the world has followed, relative to the vast natural products of Africa. To the economist the question may well suggest itself whether an energy and skill akin to that which scientific men have expended in discovering sundry of these utilizing processes, if devoted to devising means for developing the resources of the great and almost unknown continent, would not have yielded results far more valuable to mankind in the increase of raw material placed at its disposal. A striking instance is found by comparing the labor devoted to the extraction of fatty matters and grease of all kinds-labor (including the long voyages of the whaler, the sinking of wells in the oil-bearing earth, and the manifold operations known to chemistry) dependent on countless varying circumstances-with the fact that for miles along the West Coast of Africa, extending between Cape Blanco and St. Paul de Loando, there are vast forests of palms, the oleaginous fruit of which has for cepturies rotted unused upon the ground. The palm forests back of the coast line between Cape Palmas and Elmina are said to be practically inexhaustible; and so also, in the neighborhood of Fernando Po, immense tractsare covered with the frees. The total export of the palm oil to Englan l exceeds, it is said, 50,000 tuns, or a value of \$10,000,000 per annum; but it will readily be seen that this represents an exceedingly small commerce compared to what might be the case were the enormous resources fully or even moderately utilized. The Fernando Po oil crop, as an example, seldom equals 400 tuns per annum, although 4,000 might easily be produced. The difficulties in the way of the development above indicated are the unbealthiness of the country, and the monopolies controlled by slave dealers. One of the latter buys the entire right to a large and valuable region by paying the King of Dahomey \$10,000 a year. The iniquity of this monopoly is increased, says a recent writer, by the king binding all he How best to utilize human labor, and at the same time to traders to give palm oil to this trader at a price fixed by this king himself, without reference to market prices. The penalty of non-compliance with the king's command is decapita-

- VI. LESSONS IN ME CHANICAL DRAWING. By Professor, C. W. MAC-CORD, with 10 engravings.
- VII. AR JHITECTURE, with 5 engravings.—Lodges and Cottages in England.—Uses of Iron in Building.
- VIII. NATURAL HISTORY.—The Polar Bear.—Insects in Amber.
 IX. CHEMISTRY. METALLURGY, ETC.—Reduction of Iron Ores.—New Process for Iron and Steel.—Apparatus for the Estimation of Tannic Acid, 1 fg.
- Acte, 1 ng.
 X.-ASTRONOMY, with 7 engravings. —The Late Transit of Venus, 1 fig. Sun Spot Instrument, 1 fig. —Views of the Sun's Surface, 5 figs. —The Comet of 1874. —Proceedings of the Royal Astronomical Society.
 XJ.-MISCELLANEOUS. —French Tour of the World American Oysters in England. A Saxen Lady's Grave. —British Registration of Trade Marks. —Dr. JOHN C. CRESSON. —Nationality and Disease.

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of force to each and all the faculties: a type of humanity in which the average man should have the memory of some idiots, the swift and certain calculation of others, the linguistic, musical, constructive, and artistic faculties of others. Such a type of man is by no means impossible, by no means improbable. There have been prodigies in memory, in calculation, in music, in inventive power, who were up to the average in all other directions. However excessive the development of their faculties in one direction, it did not greatly impoverish them in the rest. And as, during the milleniums past, the human race has been slowly lifted from the low intellectual level of prehistoric savages, so we may reasonably infer that the race will go on increasing in mental power, until those prophetic hints of what man may be are all achieved and overpassed.

A MAN'S WORK.

produce the least fatigue, is one of those interesting problems in industrial mechanics which every inventor of machines based on man power as a motor is called upon to tion. Trade is carried on by the most primitive means. In