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  II. FRENCH INTERNATIONAL EXHIBITION OF 1878.—Wine Presses. Description of sixteen new and beculiar wine presses at the Exhibition, with 3 figures and 3 engravings. The Press Primat; Press Mabile: Press David; Samain Frees; Marchand, Maubre. Boyries, Chapellier, Marmonier, Nogues, Mailhe, Moreau, Piquet, Delperoux, Tered des Chenes, and Cassan fils Presses.

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  ELECTRICITY, LIGHT, HEAT, ETC.—Electric Lighting. Estimate of the comparative heating effect in gas and electric lighting, and the consequent loss of power.—The Electric Light. Remarks on its economy.—The Present Sugbear of French Savants.

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The Dutch Arctic Expedition. The Peak of Beerenburg, Spi zbergen, with illustration.

V. CHEMISTRY AND METALLURGY.—New Process for Separating Iodine and Bromine from Kelp.—Inoffensive Colors for Toys.—New Coloring Matters.—Tungsten.

Ozone and the Atmosphere. By Albert R. Leeds, Ph. D. Table of percentage of ozone contained in the atmosphere at various localities in the United States. Register of ozone observations for one month at Upper Saranac Lake, N. Y. giving thermometric and barometric observations, and full record of weather. Examination of methods in servations and full record of oxone by electrolysis of water containing subjuriously the electric spark decompose potassium iodide? Collection and Does the electric spark decompose potassium iodide? Collection and preservation of ozone. Preparation by chemical methods. Critical examination of ozonoscopes. Examination of ozonoscopes under cer ain conditions.

Limits of the Combatbility of Gases.—The Diffusion of Salicylate of Soda.—Singular use of Fluor escein.—New Metal. Philippium. By M. MARC Delarovation. By Richard V. MATTISON, Ph. G.—An El Dorado for Apothecaries.

MEDICINE AND HYGIENE.—The Science of Easy Chairs. The muscular conditions of fatigue, and how to obtain the greatest rest. How easy chairs should be made.

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MEDICINE AND HYGIENE.—The Science of Easy Chairs. The muscular conditions of fatigue, and how to obtain the greatest rest. How easy chairs should be made.

Prof. Huxley on the Hand. Abstract of his inaugural lecture before the South London Workingmen's College.

Paint from a Santtary Point of View. The required abolition of absorbent surfaces in dwellings. Lead poisoning from paint not thoroughly dry. Cases described in which white lead paint in dwellings never dries, but gives off poisonous particles, which are inhaled by the inmates, causing depression, weakness headache, and loss of appendix sulphide of zinc described, with covering qualities equal to white lead.

The Purification of Sewage. By HEVRY ROBINSON, F. R. S. Paper read before the Sanitary Institute of Great Britain. Progress in purifying sewage by precipitation. The use of chemicals for precipitating, decolorizing, and disinfecting. Practical data on a large scale, with cost. Average number of gallons per head of population, etc., of the successful system now in operation at Coventry and Hertford. How the water is removed from the sludge by filter presses. Drying and removal of the sludge. Theoretical and actual values of the sludge for fertilizing.

VI. AGRICULTURE, HORTICULTURE, ETC.—The Broadside Steam Digger, with 1 engraving.—Shall I Plow the Lawn?—Bee Culture.

#### PROGRESS OF PETROLEUM.

The efforts of the great majority of the Western Pennsylvania petroleum producers to obtain relief from what they deem the oppressive acts of the Standard Oil Company and the unjust discriminations of the United Pipe Lines, and the various railroads traversing the oil regions, have attracted more than usual attention to the present condition of this industry and its possible future.

We would here explain that the Standard Oil Company originated in Cleveland, Ohio, about twelve years ago, and was incorporated under the laws of Ohio, with a nominal capital now, we are informed, of \$3,000,000, which, however, very inadequately represents the financial strength of with manipulating the transportation lines to its own special

We can recall no instance of such serious hostility between parties whose interests are at the same time of such magnitude and so nearly identical; nor can we see what subthe event of their victory in the struggle.

They charge that the Standard Oil Company has become the controlling power to fix prices and to determine the ave-Combined Rates. - The Scientific American and Supplement nues by which the oil shall be transported eastward for home consumption and for foreign exportation; that the railway companies have given his company lower rates than other parties for transporting the oil; and that through the rates given to it by the railways the value of their property is destroyed.

> The reply, in effect, is, Granting all this to be true, what does it amount to? Neither more nor less than that the managers of the Standard Oil Company, by combination of the machinery is best and most used. capital, by intelligence and shrewdness in the management appliances, and by the purchase of the property of competitors, that they do practically control the prices of oil, both crude and refined, and that the uncombined capital of the other oil producers, lacking the power, the intelligence, and history. the business skill which combined capital can secure, cannot compete with the Standard Oil Company. Now, is there any great wrong or injustice in this?

When brains can command capital it is always more successful in business matters than any amount of brains withral working out of the same principle that is everywhere ing them either, than among those that live by labor. to be seen-some men are successful and others are not.

succeed to the level of the unsuccessful.

If men cannot compete with others in any business they the end of the two." must accept the fact, and try some other employment.

be permitted to do so.

tinuing in the business. Let them find other employment. They do not show that the Standard Oil Company does anything that combined capital on their part and equal business ability could not effect.

The cry of monoply in this case is altogether unfounded,

As to the railway companies, they can afford and have a Oil Company at less cost, because it costs them less to do a regular and large business than an irregular and smaller one. They would simply be acting in accordance with business principles the orld wover.

These are the arguments, the statement of the position of a successful combination confident in its resources and of victory in the coming struggle. The justness, the correctness of the doctrines enunciated, and the wisdom of so doing at this crisis, we do not propose to criticise; but it is very safe to say that if the prosperity of the complainants! depends upon relief in this direction they may as well cease producing.

There are too many of them for harmonious and concerted action against the powerful corporations they complain of; and if they should succeed in securing equal transportation facilities the prices would still be regulated by the monopostock of the oil regions.

The proposed appeal to Congress to pass some law whereby each producer can compel railroad companies to carry his produce at regular rates, amounts to a confession of the des. that sea lilies, which had hitherto been very rare—a single perate straits of the producers and of their weakness as well; and even if successful, which is most improbable, would not remedy the deplorable existing state of things.

Still lower rates would fail to give relief, with all the present avenues of trade filled to repletion and with an increasing output at the wells. Relief and permanent relief can be found only in the direction we have before indicated: in the general application of petroleum and its products to the manufacture of gas for illuminating and heating purposes, and its substitution for coal in the metallurgic and other prominent industries of the world.

#### THE LIMIT OF WORK.

In distributing the prizes to workmen at the Paris Exhibition, Louis Blanc, the leader of the French Republican Socialist party, quoted approvingly these words of Simonde de Sismondi:

"If the workman were his own master, when he had done in two hours with the aid of machinery what would have taken him twelve hours to do without it, he would stop at the end of the two.'

M. Blanc had been discussing very eloquently, but also very fallaciously, the relations of machinery to labor. If men were properly united in the bonds of association, he said, if the solidarity of interests were realized, "the happy its members. It is now a combination of the most promi- result of the application of mechanical power to industry nent refiners in the country, and has before been credited would be equal production, with less of effort, for all. The discovery of an economic method would never have the lamentable consequence of robbing men of the work by which they live. Unfortunately, we are far from this ideal. Under the empire of that universal antagonism which is the very essence of the economic constitution of modern sociestantial, enduring benefit would accrue to the producers in ties, and which too often only profits one man by ruining another, machinery has been employed to make the rule of the strong weigh more heavily on the weak. There is not a single mechanical invention which has not been a subject of anguish and a cause of distress to thousands of fathers of families from the moment it began to work."

If all this, and much else that M. Blanc alleges, were true, then the condition of all workingmen to-day should be in every way worse than that of their fathers, in anti-machinery days. But such is not the case. There never was a time when the laborer toiled less or enjoyed more than in these days of machinery; and the laborer's condition is best where

A hundred years ago the laborer toiled long, produced of their operations, have built up a successful business, and | little, and enjoyed less. To-day, thanks to the victories of that they have so extended it by the use of all practicable invention, machinery does the heaviest of the work; the workman's hours of labor are fewer than formerly; his wages are greater; and his earnings will buy vastly more, dollar for dollar, than in any previous age in the world's

What laborer of to-day would be satisfied with the remuneration, the food, the shelter, the clothing of the laboring classes of one hundred years ago? The wants of men, as well as their thoughts, are widened by the process of the suns. And in no section of society have the daily wants out capital or capital without brains. This result is the natu- | been 'more markedly increased, or the facilities for gratify-

"If the workman were his own master, when he had done It is the essence of communism to drag down those who in two hours with the aid of machinery what it would have taken him twelve hours to do without it, he would stop at

So says the theoretical socialist. The practical workman If, through superior intelligence and capital, the Standard never has, nor, we believe, ever will, act so foolishly; cer-Oil Company can control the oil business of Pennsylvania, tainly not until the limit of man's capacity to enjoy has been then, according to the principles of common sense, it must reached. When the united products of manual and mechanical effort fully satisfy the desires of all men, and leave What right, then, has the oil producer to complain? Why, no margin of want unfilled, then and then only will men be if all that is alleged is true, will they persist in sinking more satisfied with the reduction of effort demanded by the wells, when, as they say, they are controlled by the Standard socialists. Until then the larger part of every increase in Oil Company? No one forces them to lose money by con- production by mechanical improvements will go to swell the volume of good things for human use and enjoyment. Our machinery enables our thousands of busy workers to accomplish what millions could not have done years ago, and a very large part of the aggregate increase of product comes back to them in conveniences and luxuries surpassing those those opposed to the Standard Oil Company having just as the wealthiest could enjoy were machinery not employed, much right to do all that that company does, and, therefore, or were it employed, as the socialist advocates, without inthere can be no monoply, because they have no exclusive creasing the aggregate of production. The laziness of the savage and the advantages of civilization are incompatible. The chief merit of machinery lies in its enabling us to mulright to transport the tonnage offered them by the Standard tiply constantly the scope and variety of our enjoyments without a corresponding increase of toil.

# IRIDESCENT GLASS,

Ornamental glassware in many styles, tinted with the glowing colors of the rainbow, is now making its appearance in the shop windows of Broadway and Fifth Avenue. This is one of those brilliant little achievements of science that delights the eye and pleases the imagination. To produce the colors, the glass, while in a heated state, is subjected to the vapor of chloride of tin. Shades of more or less depth or intensity are imparted by adding to the tin chloride a little nitrate of strontium or barium.

#### RAILS AND RAILWAY ACCIDENTS.-NEW YORK ACADEMY OF SCIENCES.

A meeting of the Section of Physics, New York Acadlists, who carry more than four-fifths of the accumulated emy of Sciences, was held November 25, 1878. President J. S. Newberry in the chair. Numerous publications of learned societies were received and acknowledged. Professor Newberry read a letter from Professor Agassiz stating specimen bringing as much as fifty dollars—have been found in some numbers by dredging in the Gulf of Mexico. Their colors are white, pink, and yellow. Professor Newberry also exhibited specimens of garnet from California, lamellar quartz from North Carolina, sharks' teeth belonging to the eocene and miocene tertiary ages from the phosphate beds of South Carolina, and a number of shells.

Professor Thomas Egleston then addressed the Academy on the subject of "The Structure of Rails as Affecting Railway Accidents."

The destruction of rails is due to three causes. 1. De-