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Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Air and water', 'Albumen, bleaching', 'Alcohol, rectifying', etc., with corresponding page numbers.

TABLE OF CONTENTS OF THE SCIENTIFIC AMERICAN SUPPLEMENT No. 272.

For the Week ending March 19, 1881.

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Table listing contents for Engineering and Mechanics, Technology, Medicine and Hygiene, Physics, Chemistry, and Natural History, with page numbers.

THE ZODIACAL LIGHT.

On almost any clear moonless night now this phenomenon may be noticed in the western sky. In the early part of such an evening, after the twilight has disappeared, a triangle of faint light will be seen extending up into the sky.

If such a globe be set for the 1st of March and for a northern latitude, then turned over toward the west, it will be noticed at about eight o'clock that the ecliptic is nearly perpendicular to the horizon, and passes close by the zenith, the point in the sky directly overhead.

the protection of the property in his care. The case was recently decided, the jury returning a verdict for the plaintiff, giving him \$35,018.37, with five per cent. allowance.

AIR AND WATER.

The two substances everywhere met with on the surface of this globe which receive the least popular attention are air and water. The latter especially is one of the most remarkable substances in nature, and exceeds in its pervasiveness even the air.

Both air and water are essential to the existence of all known life. Our bodily health can only be supported by our taking quantities of both at short intervals.

Air and water are the great natural distributors of heat and cold. The climates of different parts of the world are very materially affected by the hot or cold currents of air which flow over them, and by the analogous currents of water established by the action of heat in the great seas.

Air and water are the great natural distributors of mechanical energy. The currents of rivers represent a portion of the mechanical equivalent of solar heat expended in raising the masses of water that flow through their channels to the clouds.

The envelope of aqueous vapor which surrounds the globe, and forms a notable part of its atmosphere, is, as has been well shown by Tyndall, the great conservator of terrestrial heat.

The ice cover which forms upon the surfaces of lakes and rivers protects the life which exists in such waters. Were it not for this provision of nature these water deposits would become solid masses, in which all their teeming life would be immovably imprisoned.

The snowblankets which have spread this year over a large portion of our land perform a similar service for the vegetable life which lies dormant below. Without this protection the ground would be too deeply frozen, the frost would be too late in leaving the earth in the spring, the growing season would be shortened, and many of the plants that now thrive in the temperate zones would cease to exist in latitudes where they now abound.

Air and water vapor are the great diffusers of light. Were it not for our atmosphere no solar light could penetrate our houses where the sun's rays do not directly enter, except such as might be reflected from solid objects.

Thus is illustrated the wonderful character of these common substances—air and water—so important to all animated existence, yet so heedlessly regarded by the mass of mankind.

THE INDUSTRIAL CONDITION OF CANADA.

A couple of years ago our Canadian neighbors, tired of industrial stagnation, adopted a protective tariff in the hope of developing home industries.

In an argument for the policy now under trial the Industrial World of Montreal describes a very hopeful state of things as its first fruits, and points out the obvious conditions of the new prosperity:

"Suppose, for instance, a factory is opened in Montreal, giving employment to 1,000 hands, what does this mean? One thousand factory employes will represent a population of at least 2,500. What would the closing of this factory and consequent expatriation of these craftsmen mean? A loss of 1,000 to 2,500? Much more. These artisans require boot, shoes, hats, caps, meat, bread, roots, vegetables, medi-

WHOSE BOILERS EXPLODE.

The records kept by the Hartford Steam Boiler Inspection and Insurance Company show that 170 steam boilers exploded in the United States last year, killing 259 persons and wounding 555.

The classified list shows the largest number of explosions in any class to have been 47, in sawing, planing, and wood-working mills. The other principal classes were in order: Paper, flouring, pulp and grist mills, and elevators, 19; railroad locomotives and fire engines, 18; steamboats, tugboats, yachts, steam barges, dredges, and dry docks, 15; portable engines, hoisters, thrashers, pile-drivers, and cotton gins, 13; iron works, rolling mills, furnaces, foundries, machine and boiler shops, 13; distilleries, breweries, malt and sugar houses, soap, and chemical works, 10.

It would be an interesting thing to have a statement of relative frequency of explosion—the number, that is, to each thousand boilers in use in each given class of steam-using establishments.

STORM WARNINGS IN COURT.

On the night of March 24, 1877, the hull of the steamboat Rockaway, built at Norfolk, Va., was taken by the steamship Wyanoke, of the Old Dominion Line, to be towed to this city.

The owner of the Rockaway brought suit against the Old Dominion Steamship Company to recover damages to the amount of \$40,000. The main plea of the plaintiff was that the captain of the Wyanoke, in disregarding the storm signals, failed to exercise due diligence and precaution for