

investigations carried on under the patronage and supervision of Messrs. W. E. Hale & Co., of Chicago, and known as Hale's Standard Hydraulic Elevator, answers every requirement for the purposes to which it is suitable, and they have accordingly secured the manufacture for the Eastern States.

An examination of the construction of this elevator, and of its working in large edifices in our chief cities, is amply confirmatory of their judgment. It will be interesting to many of our readers to indicate its main features, including the safety appliances superadded to the several working parts by which the platform is protected from all descriptions of disaster that have occurred in the use of elevators.

The motive power being water, the weight and pressure are obtained by drawing it from a tank in the upper portion of a building, or from the city mains, the water flowing into the cylinder. The carriage is raised by drawing the water from the cylinder below the piston, the valve leading to the exit pipe being opened by the operator drawing the rope. In this operation the normal pressure of the atmosphere on the water of the piston is a contributory power. In the descent of the carriage, the cylinder, which is always full, rises to the upper end. The system is one analogous to the compensation balance. The counterpoise of the cage exists in the continued weight of the block and piston, so that the resistance to be overcome is simply the load and the inertia of the working parts; but these are reduced by the weight of the air (15 lbs. to the square inch), gained by the escape of water, the absolute weight of the water acting on the piston and the pressure with which it is conveyed from the city main, or, where a tank is used, that varying pressure arising from difference of level between it and the cylinder.

It will be seen that the carriage is secured to the piston by several ropes, which pass up over a fixed pulley-wheel, thence to a weighted ginblock, their standing parts being firmly secured. The ease of control is obvious. The elevator is so constructed that it can not fall more than a few inches; for its course will be almost instantaneously arrested should the wire-lifting ropes part. In a large building requiring several elevators, all can be connected with one system of pump and tank supply; just as, in case of the steam elevator, several are operated by steam from one boiler.

There is to be, we are confident, a large demand for the Hydraulic Elevator for use in private residences in this and other cities, as they can be connected with the usual pump and tank system by simply increasing its capacity to meet the requirements of the elevator.

We here furnish an illustration of Messrs. Otis Brothers & Co.'s Elevator.

To extreme simplicity Hale's Standard Hydraulic Elevator adds the advantages of stability of construction, extreme economy through the minimum of water and water-power employed, the setting aside the necessity of engineering skill in its management, its readiness for use at all times, its absolute safety, and freedom of the cylinders from any the least possible friction as regards the gearing and light-running qualities. *Scientific Amer.*

### DIETING FOR HEALTH.

Dieting for health, says *Hall's Journal*, has sent many a one to the grave, and will send many more, because it is done injudiciously or ignorantly. One man omits his dinner by a herculean effort, and thinking he has accomplished wonders, expects wonderful results, but by the time supper is ready he feels hungry as a dog, and eats like one, fast, furious and long. Next day he is worse, and "don't believe in dieting" for the remainder of his life.

Others set out to starve themselves into health, until the system is reduced so low that it has no power of resuscitation, and the man dies.

To diet wisely, does not imply a total abstinence from all food, but the taking of just enough, or of a quality adapted to the nature of the case. Loose bowels weaken very rapidly—total abstinence from all food increases the debility. In this case food should be taken, which, while it tends to arrest the disease, imparts nutriment and strength to the system. In this case rest on a bed, and eating boiled rice, after it has been parched like coffee, will cure three cases out of four of common diarrhoea in a day or two.

Others think that in order to diet effectually, it is all important to do without meat, but allow themselves the widest liberty in all else. But in many cases, in dyspeptic conditions of the system particularly, the course ought to be reversed, because meat is converted into nutriment with the expenditure of less

stomach power than vegetables, while a given amount of work does three times as much good, gives three times as much nutriment and strength as vegetable food would.

### SCIENTIFIC ITEMS.

ALL sorts of vessels and utensils may be purified from smells of every kind, by rinsing them out well with charcoal powder, after the grosser impurities have been scoured off with sand and potash.

THE paper sheathing invented by Capt. Warren for preventing the fouling of ships' bottoms proves to be a success, as the *Serapis*, after a voyage to India and back, and two months in dock, was found to be quite clean, except where the jelly fish had attached themselves to portions of the cement from which the paper had been removed by abrasion.

POLISHING VENEER WOOD.—After scraping up veneer, first give a coat of size for stopping up grain, then colour or stain, and proceed to polish. It is a great mistake to use too much oil. For all hard woods the polishing is the same, but not for stopping, as size is generally used for dark woods, and plaster or chrome for light. Putty-lime is a good stain for Honduras mahogany, chestnut, and other woods.

PROF. W. HOFFMANN directs attention to the spontaneous ignition of hydrogen. The phenomenon has been noticed in works where large quantities of chloride of zinc are prepared. Fragments of the zinc, when very porous, are lifted above the liquid during the violent evolution of the gas, and act in the same way as spongy platinum in the presence of hydrogen and air. He, therefore, recommends the preparation of zinc chloride out of doors. The ignition of the hydrogen can be shown by treating a few kilogrammes of finely divided zinc with acid. The zinc dust may even ignite upon contact with water.

LONG FASTS.—Business men are apt to fall into a very dangerous habit of dispensing with their lunch in the middle of the day. The pressure of engagements makes minutes important, and the few required to eat a lunch cannot be conveniently given. Frequently nothing is eaten between breakfast and six o'clock dinner. The fast is too long. Hardly any constitution can stand it permanently. The consequence is dyspepsia, with its low spirits and all its other accompanying horrors. It is not necessary to live to eat; but man must eat, and eat often, to live and be well.

COPY BY PHOTOGRAPHY.—Mr. H. Pellet, a French chemist, has invented a new process for the purpose of making photographic copies of machinery, drawings, plans, maps, &c., in blue lines on a white ground. This process (according to *La Nature*) is based upon the peculiar property of perchloride of iron, by means of which it is changed into protochloride on exposure to light. The inventor prepares a sheet of paper by first dipping it in a solution composed of 100 parts water, 10 parts of perchloride of iron, and 5 parts of oxalic acid. This process renders the paper very sensitive. The paper can be sized as desired by the addition of isinglass, gelatine, or other substances. M. Pellet calls paper so treated cyanafor paper, and when dried in the dark may be kept for almost any length of time. When it is desired to make a drawing on transparent paper, the drawing is stretched over a dry sheet of the cyanafor and a plate of glass placed over this, after which it is exposed to the light. When the full rays of the sun in summer are allowed to fall on the glass it requires from one-fourth to one-half minute to decompose the perchloride of iron. The parts, however, directly under the lines of the drawing, being protected, do not become affected by the light. In winter double this time is required, and in cloudy weather from two to six minutes. The paper is now dipped in a bath of prussiate of potash, the solution being in the proportion of 16 or 18 of the prussiate to 100 of water, and the perchloride where unchanged becomes blue, the changed surface remaining white. The surface of the sheet is then freely washed in water, and dipped in a solution composed of chlohydric, 8 to 10 parts, and water 100 parts, and again washed off in water when the drawing appears in distinct blue lines.

### THE PATENT OFFICE, WASHINGTON.

We here copy from the *American Architect and Building News*, the designs which show the proposed alterations as submitted to the committee by the successful competitor, Mr. J. A. Voydagh. The description of these arrangements are printed in the paper above named dated August 31st, 1878.