

Scientific American.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 37 PARK ROW, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS.

One copy, one year \$3 00
One copy, six months 1 50
Ten copies, one year, each \$2 50
Over ten copies, same rate, each 2 50

VOL. XXVIII., No. 6. [NEW SERIES.] Twenty-eighth Year.

NEW YORK, SATURDAY, FEBRUARY 8, 1873.

Contents:

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Acetate of soda for preserving meat', 'Agricultural implements', 'Air power', etc., with corresponding page numbers.

THE DOCTORS AND THE APOTHECARIES.

Apothecaries were originally confectioners, engaged in making preserves, candied fruit and bonbons for the tables of the rich. By degrees, they took to dealing in healing herbs; and after the invention of distillation, sublimation and the chemical processes, they fitted up laboratories with furnaces and expensive apparatus; and in consequence of the cost attending such improvements the governments granted certain monopolies and privileges, and in the course of time the art of compounding medicines became a science, and the physicians gladly handed over their prescriptions to persons more familiar with drugs than they themselves were.

R Ext. Arnicae, . . . . . ʒ ij.
Strychnia Sulph., . . . . . gr. xii.
Conf. Rosae, . . . . . q. s., ft. pil. cxi.

This is all very well when printed, but suppose it comes to the apothecary in a cramped and irregular hand, written with a pencil and half rubbed out. He may be able to read

what particular medicines were prescribed, but the quantities of each might baffle all attempts at interpretation, and whether we take ten grains or twenty grains of strychnin is a matter of serious importance to the patient. In such an extremity we dare say that the druggist tries to err on the right side, and halves the supposed amount, and he is now accused of forgetting to make a corresponding deduction in the price. The physician's side of the story is that the apothecaries are sometimes not properly educated, and hence make mistakes in reading prescriptions. They say that pharmacists must be familiar with Latin and with all the abbreviations usual in the profession. On the other hand, some of the pharmacists say that the doctors have neglected their own Latin and are far behind the times in chemistry. They lay at the door of the physician that he attempts to compound the most impossible mixtures, in utter contempt of the laws of affinity and of double decomposition. When prescriptions of this character come into the hands of the experienced apothecary, he sometimes secretly changes them; or, if the chemical reactions do not form poisons, he follows strictly the letter of the law and throws the responsibility upon the doctor. We have been told by a professor of chemistry in New York that certain prescriptions have been confidentially shown to him, as items of scientific curiosity, and they have afforded considerable amusement in chemical circles. The errors cited were due to an ignorance of qualitative analysis, and ought not to have been made by a graduate of a medical college. It is generally said that medical students are more ready to desert the chemical lecture room than the course of any other professor. They look upon the dull details of acids and salts as anything but agreeable, and are always ready to take up physiology and anatomy as offering more attractions. Just before the final examination, they employ a tutor and, by hard cramming, contrive to pass the necessary ordeal. This, we are told, is the course pursued by the negligent students of medicine; and, if we could follow the subsequent career of this class, while engaged in active practice, we might be able to trace some of the blunders of which apothecaries are accused to the men who shirked the laboratory and lecture room, and crammed for a degree.

There are, therefore, evidently two sides to the question which is now agitating the medical press, and it would be well for both parties to seek for a remedy of the evils complained of. The medical profession is one of great dignity and importance. The health of a community is entrusted to physicians, and the responsibility is a grave one, requiring years of careful preparation and nicely tested experience. Hardly second in importance, owing to the immense progress made in chemistry and pharmacy, is the education of the apothecary. Colleges of pharmacy are quite as necessary as colleges of medicine, and, if both the physician and apothecary are thoroughly educated, the question of Latin prescriptions or technical terms would have less significance; it would soon solve itself, and we should hear no more about it. But all the education in the world would prove of little value without absolute honesty in prescribing and equal integrity in compounding. The physician should know what he is about, and, after making his diagnosis and prognosis, should write his prescription with due care and deliberation; and this being done, the apothecary must follow it to the last grain. Any tampering with prescriptions, as one would present a false invoice at the Custom House, for the purpose of greater pecuniary profit, is not to be tolerated for a moment, and ought to be visited with penalties far more severe than are ever attached to an infraction of revenue laws. Let the physicians and apothecaries unite together in securing such legislation as will protect both themselves and the community from the impending danger.

PHOTOGRAPH PORTRAITS--AN IMPROVEMENT.

At a recent meeting of the Photographic Society of the American Institute in this city, a discussion took place upon the merits of the new method of shortening the exposure of photographic plates in taking gallery portraits. Several of our leading photographers took part in the discussion, and specimen negatives were shown. Mr. H. J. Newton exhibited a negative upon which were two pictures, both of the same subject, showing no apparent difference, although one was taken with an exposure of seventeen seconds, the other with only seven seconds. In the example of another negative, one of the pictures had an exposure of thirty-six seconds, the other eighteen seconds, both equally good. The operation is as follows: The sensitive plate is first placed in the camera and exposed to red light, which is admitted through the tube, the mouth of which is covered by a red colored glass. This exposure to red light is continued for from ten to twenty seconds. The shield slide is then pushed in and the red glass removed, after which the portrait of the sitter is taken in the usual manner, except that the time of sitting is greatly reduced.

This is a very simple improvement. Any of our photographic readers may try it, and adopt it in their galleries. Mr. Anthony, Mr. Kurtz, and other photographers regarded the process as quite useful. Mr. Kurtz said the great object of the photographer, in portraiture, was to secure a natural expression of the features; in a long exposure, it was impossible for any sitter to maintain such expression. Then, in taking portraits of children, it is of the first importance to have a short exposure of the plates. The improved process gives these advantages, without much perceptible loss in the details. The theory on which this process depends appears to be this: when the photographic action is once started on the plate, it is easily maintained. It may be compared to the inertia of a wheel or a car. When the inertia is once overcome, it is easily kept in motion.

THE EYE AND THE SUN.

Mr. Oliver Byrns, of Canada, has forwarded to us a pamphlet in which he argues that, because the pupil of the eye becomes expanded during the darkness of night, the disk of the sun on its rising is apparently larger than when that luminary reaches the zenith. He also says that when the sun is in the horizon its rays have to pass through a thicker stratum of air than when it is overhead; that the atoms of air are competent to intercept a portion of the sunlight on its passage, and the greater the distance of the air to be passed through, the more light will be cut off. Hence the gross amount of light which reaches the observer's eyes will increase from sunrise till midday, and decrease from midday to sunset, and the pupils will contract and expand in proportion. He finally thinks the time may come when the orbit of the earth will be found a circle. Comment on such theories is useless. They indicate a mental atmosphere of ignorance of astronomy, optics, and physiology so dense that the strongest light of common sense would become utterly absorbed in endeavoring to permeate its obscurity. We suppose that if this philosopher took a dose of belladonna or inserted a little atropia in his visual organs, he would expect to see the sun cover nearly the entire firmament.

STEAM AS A FIRE EXTINGUISHER.

While we are discussing the dangers of steam as a cause of conflagration, it is curious to observe that the German scientific and industrial journals are discussing the value of steam as a fire extinguisher, and some of the local governments are preparing to take measures for the introduction of special steam boilers for the sole purpose of generating steam rapidly, so as to blow it into burning buildings and smother the flames by displacing the air by steam.

Dr. Wiedenbuch, of Wiesbaden, recently published in the Polytechnic Journal an article on this subject, and points out the advantage that steam, while it is not a supporter of combustion and extinguishes fire by driving the air away, is not irrespirable per se, and does not act injuriously on living beings, like carbonic acid, sulphurous acid, and other gases which are also non-supporters of combustion. The only danger of steam is that, when escaping under great pressure, as when superheated, it will scald any one who is close to the point of escape; while, at a distance, it cools so rapidly by its own expansion that it soon becomes harmless. Dr. Wiedenbuch's last opportunity of witnessing the effectiveness of steam as a fire extinguisher was on the occasion of a fire in a factory 180 feet long and 30 feet wide; it was one story high, with an attic separated by a wooden floor. The attic was filled with a great many tuns of rags, shavings, leather scraps, etc.; and among these, a fire broke out in the night, which was only discovered when half the roof was in flames. As the location of the establishment was quite out of the way, more than an hour elapsed before the fire engines arrived from the nearest station; meanwhile the conflagration met but little resistance, by reason of the very unsatisfactory preparations against fire, and soon the whole roof was in flames; it fell in, and the fate of the lower story appeared sealed. There was a steam boiler in an outhouse with the furnace banked; the fire therein was quickly increased by means of wood, the steam being still up. A courageous carpenter, contrary to the orders of the Fire Marshal, who had decided that the walls should be thrown down, went into the burning factory, and by means of a heavy axe broke the first cast iron steam pipe he could reach; of course the steam immediately escaped under considerable pressure, filled the whole place, and extinguished one burning mass after the other; and even the rag heaps in the attic, which, after the fall of the roof, were burning in the open air, became more and more surrounded with steam, so that in half an hour after the steam was admitted all danger was considered over, and the firemen, who had in the meantime arrived with their engines, considered their labor unnecessary, it having been so effectually replaced by steam.

The German papers point out that every manufacturer who uses a steam boiler possesses the most powerful fire extinguisher, which he may make available by proper additional arrangements. For instance, wrought iron gas pipes connected with the boiler, branching off into every room, may be provided with stop cocks which, in case of fire, may be turned on, and so every portion of the building may be filled with steam. It is recommended, especially, that theaters should have steam tubes connected with a system of heating in which, by means of petroleum or some equivalent as fuel, a great quantity of steam could be raised within ten minutes, or even less, and blown into the burning portion of the building. As no pressure is necessary for such an apparatus, it may be constructed in a simple manner, and still be perfectly safe; but the quantity of steam must be sufficient, and therefore the whole problem is to generate the largest possible amount of steam at low temperature and pressure.

Finally, it is proposed in Germany to make transportable steam boilers, and connect them in case of fire with a system of tubes, with which the buildings are to be provided, and which is accessible at the front of the house, so as to be easily connected with the steam generator in the street. We may here remark that this very same plan was patented in this country, in the spring of 1870, by Dr. Orazio Lugo, a distinguished chemist at that time residing in Baltimore. The plan was at that time very favorably received by insurance companies; and it is remarkable that it has not yet received a more extensive application.

We wonder what our German friends will say when they are informed that, according to a no less authority than the Fire Marshal of the metropolis of the New World, steam is