Peale's Wages Calculator.

The *Scientific American* of the 9th September, contains an illustration of a very ingenious calculator, the usefulness of which the following description will afford a pretty distinct idea to the reader:—

"By the use of the instrument herein illustrated the various causes of error heretofore existing, in the making up of pay-rolls, are entirely avoided. It consists of a cylinder, on the surface of which is arranged a calculated table; the left-hand column contains the number of days and fractions of days to be calculated, namely, 1, 1¼, 1½ days, and so on for any number of days, to suit, for weekly, semi-monthly and monthly payments. This cylinder is inclosed in a zinc case, and revolves therein on pins having a bearing in the ends of the case. It is easily moved by a milled head at the left end, and the whole is neatly mounted on a walnut base. Running nearly the entire length of the case is an opening sufficiently wide to expose but one row of figures at a time. Immediately below this opening is placed, on the outside of the case, a row of figures denoting the several rates of wages, from the lowest to the highest ordinarily paid. The operation of this instrument can be readily understood by presenting an example, as follows:—

To find the amount of wages necessary to be paid for 9¾ days at the rate of $12 75 per week, or $2 12½ per day. Turn the cylinder by means of the milled heads at the left end, until the figures 9¾, on the left hand column, appear to view; then above the figures $12 75, denoting the rate of wages, on the outside of the case, will be found $20 72—which is the amount to be paid.

They are also arranged for calculating by the hour and half hour. This is a very useful contrivance.

For further particulars address C. W. Peale, No. 2,600 Hamilton street, Philadelphia, who will furnish machines at $6 for weekly, $8. for semi-monthly, and $10 for monthly sizes."

Tyndall and the Climate of California.

The interior of California is occupied by a great valley, lying between the coast range of mountains and the Sierra Nevada, being some 60 miles in width, from east to west, and 300 in length from north to south. The climate of this valley is very peculiar; like the rest of California, it has no rain during the summer, but, unlike the coast district, the days are excessively hot, while the nights are remarkably cool. For months together the thermometer ranges in the afternoon from 100° to 109° in the shade, but after about five o'clock, it begins to grow cool, and the temperature continues to fall till sunrise. A bowl of butter at sunset will be liquid oil, and at sunrise as hard as if it were imbedded in ice. Another noticeable feature of the climate is the extreme dryness of the atmosphere; lumber is seasoned with wonderful rapidity, and clothes washed and hung upon a line are completely dried in a few minutes.

In a nice laboratory in England a philosopher is engaged in some very abstruse investigations of the nature and action of heat. His apparatus is of wonderful delicacy—his thermometer being so sensitive that the approach of the human hand within three feet of it will vary its indications. With this delicate apparatus, with large knowledge, and with patient labor, the eminent physicist has prosecuted his examination of the subtle and invisible force which was the subject of his investigations. Among other facts, he learned that while heat passes freely through atmospheric air, its course is seriously obstructed by minute quantities of the vapor of water.

What a miracle is civilization! Sitting in our office in New York, by the aid of books and mails, we are able to glance in one direction across the stormy ocean to the laboratory of the philosopher, and in the other across the broad continent to the parched valley of the Sacramento, and to perceive an interesting relation between the two. The discoveries of Tyndall have taught us why it is that the dryness of the California atmosphere causes the days to be hot and the nights cool. The absence of aqueous vapor from the air allows the sun's rays to pour down with undiminished force during the day, and during the night the same cause permits the radiation of heat from the earth to go on with greater rapidity than the moister air of other climes.—*Scientific American.*

A New Explosive Substance.

Glycerine as we all know, is the sweet principle of oil, and is extensively used for purposes of the toilet, but it has now received an application of rather an unexpected nature. *Galignani* states that in 1847, a pupil of M. Pelouze's, M. Sobrero, discovered that glycerine, when treated with nitric acid, was converted into a highly explosive substance, which he called nitro-glycerine. It is oily, heavier than water, soluble in alcohol and ether, and acts so powerfully on the nervous system that a single drop placed on the tip of the tongue will cause a violent headache that will last for several hours. This liquid seems to have been almost forgotten by chemists, and it is only now that Mr. Nable, a Swedish engineer, has succeeded in applying it to a very important branch of his art, viz., blasting. From a paper addressed by him to the Academy of Sciences, we learn that the chief advantage which this substance, composed of one part of glycerine and three of nitric acid, possesses, is that it requires a much smaller hole or chamber than gunpowder does, the strength of the latter being scarcely one-tenth of the former. Hence the miner's work, which according to the hardness of the rock, represents from 5 to 20 times the price of gunpowder used, is so short that the cost of blasting is often reduced by 50 per cent. The process is very easy. If the chamber of the mine present fissures it must first be lined with clay to make it water-tight; this done, the nitro-glycerine is poured in and water after it, which, being the lighter liquid, remains at the top. A slow match, with a well charged percusion cap at one end, is then introduced into the nitro-glycerine. The mine may then be sprung by lighting the match, there being no need of tamping. On the 7th of June last three experiments were made with this new compound in the open part of the tin mines of Altenburg, in Saxony. In one of these a chamber 34 millimetres in diameter was made perpendicularly in a dolomitic rock 60 ft. in length,