Practical Memoranda.

Circumference of the Ellipse. (From the Scientific American.)

Several branches of mechanics and engineering experience the want of a correct mode of finding the circumference of an ellipse. The rules by the books give an approximation to truth only when the difference in the two diameters is small; and the most correct is by the formula: $\sqrt{4D^2+d^2+1}$.11.

The error in this rule increases with the elongation of the ellipse, and the true test for correctness is to apply it to both extremes of the ellipse, viz: —a circle having two equal diameters and a line with only one diameter. The rule now presented is circuitous but exact. It gives the diameter of a circle of which the circumference is equal to that of the ellipse. Rule:—Multiply the decimal $\cdot 13662^*$ by the difference of diameters. Let the diameters take the form and office of a vulgar fraction; subtract what the fraction demands from the above product; repeat the process with the remainder; to this last remainder add the mean of the two diameters for diameter of required circle.

Example.

Diameters of ellipse 1 Decimal Difference of diameter	•13662 3
Subtract ‡	·40986 ·10247
Subtract‡	·30740 ·07685
Add mean diameter	•23055 2.5
Diameter of circle	.73055
Circumference of ellipse Circumference by the formula	3·576 0·153
Decimal	·13662
Mean of diameter	1.
Circumference of circle Circumference by formula	3·1416 3·1395
Decimal	·13662
Mul. by differences of diameters	•13662 •5
Diameter of circle	•63662
Circumference (sides) of line Circumference (sides) by formula Cincinnati, March, 1865. F. V	2. 2.22 W.B.

Cubic Capacity of Cylinders.

The area of the end of a cylinder multiplied by its length equals its cupic capacity.

* More accurately, .1366197697.

Solid Contents of a Conc.

To find the solid contents of a cone, multiply one-third of the area of the base by the height.

A steel wire may be made from an iron one by plunging it into melted cast iron.

Fats and vegetable acids may be cooked in hot copper sauce-pans without danger, since the metal is not attacked by them except when cold.

Rosin for violins should be melted with a little vinegar.

The cube of the diameter of a sphere multiplied by 5236 will give the solid contents.

Photography.

ON THE GLASS ROOM AND PORTRAIT CAMERA.

BY THOMAS SUTTON.

(Paper read before the Photographic Society of Scotland on March 14th, 1865.)

Mr. Chairman and Gentleman,-The great development of photographic portraiture, and the great importance which that branch of photography has assumed as compared with all other branches of the art render it unnecessary for me to offer any apology for the subject which I have chosen for my paper this evening, viz. the Construction of the Glass Room and of the Portrait Camera. The chemical processes employed for taking portraits have now been brought to a very high state of perfection, and it must be a matter of regret to every reflecting person that, with such excellent processes and such excellent lenses as photographic portraitists now possess, so many glaring defects should still be seen in their productions-defects which appear to me to be attributable chiefly to general inattention to right principles of construction of the glass room and of the portrait camera. I trust that you will all agree with me, and that I shall not hurt the feelings of any gentleman present, when I say that photographic portraits, as a rule, are much less perfect and artistic than they ought to be,-that they very rarely do justice to the sitter,—that the expression is commonly unpleasing-the eyes like anything but what eyes are known to be, and even the vaunted resemblance to the sitter, in a multitude of cases very questionable. Some amusing instances of the truth of the latter remark I will relate, as having come under my own observation. I was perfectly familiar with the countenance of your respected President, Sir David Brewster, through at least half a dozen photographic portraits which I have seen of him, when one day he was pointed out to me in propria persona as a visitor to the exhibition of the Photographic Society. I should not have known him in the least for the original of any of the photo-graphic portraits I had seen of him, or even of one which was then hanging upon the walls of that very Exhibition. Again, when I was at King's College Mr. Hardwich left behind him a