bone or spine. And here?—*the ribs.* Quite right. And here?—*the breast bone.* Yes; now what part of the chest will these bones form?—*the sides.* Quite right. Then we have found that it is like a box except that it wants—*a bottom,* and—*a lid.* Quite right; but we must not have a lid to our—*chest,* and why not? What has to come down into the lungs every time we breathe? *The air.* Then we only want a—*bottom;* and for the bottom we have a flat fleshy partition. And there are also fleshy bands which join the ribs to each other. Now you can tell me something that we shall find in our chest. *Our lungs.* Yes, and do you know of anything else that is in our chests besides our lungs? What do you feel beating here? *Our hearts.* Quite right, and there are other things that we will not talk of now, such as the liver, but our lesson is on the—*lungs.* Yes, now I want you to try and understand how the lungs are situated in the chest. Can any one tell me how many lungs each of us has? Well you know we have more than—*one;* or we should not call them *lungs,* but *lung.* Quite right, we have two lungs. Now look on the black board and I will try to show you how they are placed. What did you tell me we found beating in our chests? *Our heart.* Yes, then we will call this our heart. (H.) And how many lungs have we? *Two.* Quite right, and we shall find them placed so (LL) one on each side of the—*heart.* Yes, we must remember that the lungs are close to the—*heart.* Yes, and I want you to remember also that our chest is only large enough to hold the lungs and heart and liver, and other things that are in it, when the lungs are empty, that is before we have drawn in our—*breath.* And when we have drawn in the air and so filled our lungs, are they larger or smaller? *Larger.* Quite right, because when the air is in, it will stretch or expand them. Then if they become larger they will want more—*room.* And as the chest was only just large enough to hold them before what must it do in order to hold them now? It must stretch. Yes, or—*expand.* And what have we said that the chest is made of? *Bones and fleshy bands.* Yes, and which part do you think it is that stretches? *The fleshy part.* Quite right, the fleshy bands between—*the ribs.* When do these stretch to make the chest larger? *When we draw in our breath.* Yes, and so the chest becomes—*larger,* and gives room to the—*lungs.* Now can any one tell me what kind of clothes will prevent the chest expanding? *Tight clothes.* Quite right; then if we wear tight clothes we cannot draw enough air into—*the lungs.* Because they have not room to—*expand.*

III.—RECAPITULATION.—STRUCTURE.

But now although we have found out in what part of the body the—*lungs are,* we have not said what kind of things they are. Can any child tell me what they are like? Hands out all who have seen a large sponge. Hands down. Now hands out all who can tell me something that they noticed about the sponge. That little girl. *It has little cells in it.* Quite right. Another. *It is soft.* Quite right, and our lungs are very much like two large—*sponges.* Then what will they have in them? *Cells.* Yes, but we do not call them cells. What are they for? What goes into the lungs when we breathe? *The air.* Quite right, and part of these holes, or cells, are for the—*air.* Yes, and we will call those *air tubes.* What are they called? *Air tubes.* Yes, and besides these air tubes we have others through which the blood flows, what may they be called? *Veins.* Yes, or what do we call the tubes which carry the blood through the skin? Quite right, and we will call those which take the blood through the lungs—*blood vessels.* Quite right, and these blood vessels are largest where the lungs are widest, where is that? *In the upper part.* Quite right, and in the lower part they are very—*small.* Yes, nearly as small as hairs. Then they turn again and gradually become larger towards the—*top.*

IV.—RECAPITULATION.—USES.

What did we say the tubes in the lungs were for? Part for the air, and part for the blood. And where does the blood come from into the lungs? What is placed between the lungs? *The heart.* Quite right, and you were told a few weeks ago that it was from the heart that the blood flowed all over the—*body.* Quite right, and it is from the heart that the blood flows into the—*lungs.* But when it is sent through the veins of the body it goes from the heart red and pure, and comes back dark-coloured and impure. But if we could see the blood flowing from the heart into the lungs we should see it looking very dark when it leaves the heart to go into the—*lungs.* And when it comes back to the heart it is charged with a bright—*red.* Then it is impure when it goes into the—*lungs,* and pure when it comes back to the—*heart.* Then it is made pure while it is in—*the lungs,* Can any child tell me how this is done? Well we cannot tell exactly how it is done but we can find out by *what* it is done. We will try. What did we say there were in the lungs besides the blood-vessels? *Air tubes.* Quite right, and the air tubes and blood-vessels are separated from each other by a very thin—*skin.* Yes, and this skin is so thin that the air acts upon the blood through this skin and makes the blood *pure.* But while the air purifies the blood, it becomes impure itself, so that the air we breathe out is not fit to breathe over—*again.* No it is not fit for us or any one else to breathe over again, for it is poison, and not pure. And if the air we breathe in is not pure it will not make our blood—*pure.* Then what kind of air do we need to breathe? *Pure air.* Yes, quite right; but even if the air is pure if our clothes are so tight that the lungs cannot expand, to take in enough air, will the blood be quite purified? *No.* Certainly not, because there will not be enough air in—*the lungs* to touch all the—*blood.* Then we must not only breathe *pure* air, but also—*enough of it* or else our blood will not be made—*pure.* And if our blood is not pure we shall be—*ill.—Papers for the Schoolmaster.*

Rules for making expert Arithmeticians.

The following rules for imparting rapidity in calculation were given by Prof. De Morgan. When pupils have acquired such facility in the combination of numbers as to pronounce at once their results as they pronounce a word on seeing the letters, then alone are they prepared to proceed with the highest success to the problems of arithmetic.

1st. Supposing the learner to be able to count with sufficient rapidity backward and forward, by single units, he should then learn to count backward and forward by twos, by threes, by fours, up to tens, beginning with different numbers. For instance, commence with three and add four—thus: 3, 7, 11, 15, 19, etc.; or commencing with sixty-one—thus: 61, 57, 53, 49, 45, etc. *No reiteration should be allowed. It should not be three and four make seven, seven and four make eleven; but simply* 3, 7, 11, 15, *etc.*—If there be difficulty, let the pupil be allowed to take his own time; but let him be prevented from repeating any single word, except one which expressses a resu't.

2d. The next exercise is the formation of the defect of a lesser number from a greater, when the defect does not exceed nine.—The manner in which it should be required is by giving the lesser number, and the units only of the greater—the learner having to supply for himself the tens which should be in the greater, so that the defect may not exceed nine. Thus, having fifty-six an 1 seeing four, the exercise consists in learning immediately to supply both the eight in " fifty-six and eight make sixty-four," and also the six tens. To perform this exercise by itself, write down any line of figures, as 823417554. Make examples by taking the first two figures for the lesser, and the next for the units of the greater; then the second and third, and the fourth, and so on. The process then is to make out, as rapidly as possible, eighty-two and one are eighty-three, twenty-three and one are twenty-four, thirty-four and seven are forty-one, forty-one and six are forty-seven, seventeen and eight are twenty-five, and so on.

3d. The multiplication table is now to be learned, up to nine times nine, at least, but not not in the common way. Of all the drawbacks upon rapidity of computation, none is so great as the common habit of reproducing in regular form the assertion, eight times seven are fifty-six, every time that eight and seven are seen, and multiplication is known to be coming. The exercice we now speak of consists in stating instantly the product of two digits as soon as they are seen. Take a line of figures, as before, and learn to repeat rapidly the product of every pair, without naming either of the pair. 72698593376598. The following products are to be caught instantly: 14, 12, 54, 72, 40, 45, 27, 21, 42, 30, 45, 72, etc. One advantage of this process will be, that the learner will become equally habituated to the products, whether the greater factor be seen first or the lesser.

4th. The next thing to be acquired is the formation of a product increased by a given digit, or a given digit by a product, instantly, without repetition of the factors or adend. Instead of four times eight are thirty-two, and three are thirty-five, we ought to require only the words 32-35; that is, only the results. If rows of figures be again taken, and if the exercise be repeated on each three figures consecutively—slowly at first, if necessary, but keeping strictly to the rule of allowing no additional words to be either articulated or thought of—it will not be found very difficult to make the results come as readily as those of the simple multiplication table. Thus, taking 62987401328, the object is to arrive rapidly at 21, 26, 79, or 6 x 2 x 8, 2 x 9 x 8, 9 x 8 x 7, 8 x 7 x 4; also at 72, 88, 119, etc., or (6 x 2) x 9, (2 x 9) x 8, (9 x 8) x 7, etc.

5th. The next process is to catch the result of the preceding process, and to add it to another figure, naming the first result only, and none of its constituents. Taking again a row of figures—725836294759—the object is to arrive at 19 and 27, 18 and 21, 43 and 49; or, taking the sum of the two first numbers, multiplying the third and adding the fourth, and so on—thus, 45 and 53, 56 and 59, 39 and 45, etc.

6th. The next of these exercises ressembles that in (2), only that the smaller number is found as in (4). A product increased by a digit is to be taken from a number, of which the unite place is before the operator, while the ten's is to be supplied as wanted, to make the defect not exceed nine. Thus, out of 7861, is to be instantly supplied 62 and 9 are 71, or 7 x 8 x 6 is to be made up to the next number that ends with one.