RAMBLING TALKS.

(Address all correspondence for this column to Educational Review, Fredericton, N. B.

It is strange how easily satisfied pupils are with the sounds of words. If they can pronounce a word, they are satisfied. Let the teacher recall how frequently pupils ask her to pronounce a word, and how unusual it is for a pupil to ask, "What does the word mean?" and she will see the point of what I am saying.

There is a hint here for us. We should not only help the pupils in their pronunciation, but carry it one step further, and see that they know the meaning of the word that they cannot pronounce. The pupil may not be able to give a good definition of a word, and yet know what it means. In such a case ask him to make a sentence in which the word is properly used. If he can do this, it would be satisfactory.

We must not take too much for granted, and think that because words are familiar to us they are also familiar to the children. A man once told me how surprised he was to find that "humid" meant "moist." He did not find it out until years after he left school. He had told his teachers many times that such-and-such a country had a humid climate, but he had always though the word meant "warm."

Children are as curious about the meaning of words as they are about everything else. If this curiosity is encouraged, instead of repressed, they will not be satisfied with the mere sound of words.

A teacher recently wrote me asking this question: "Will you work problems in mathematics, like they do in some educational magazines?" My answer to this is both yes and no. I am willing to discuss the principles that underlie problems in mathematics, and even solve problems, if by so doing I can help the teacher teach better; but I am not willing to DO problems, if by DOING problems is meant juggling numbers, in order to get answers. I am aware that there are certain magazines that feature this kind of thing, but I believe that they are an injury rather than a help to the teacher. As teachers, we need inspiration, encouragement and help, but not that help that makes us mentally lazy.

In case I can throw any light on the teaching of any branch of mathematics, I am willing to do so. Of course there are some problems in our text-books that are merely riddles or puzzles. They should be known and avoided by the teacher. They are of no value—pedagogic or otherwise. I shall retain the right to reject any such problems that may be sent in.

TO CORRESPONDENTS.

S. S.—I presume you have read what I have written above. I do not consider the question you submit as possessing much teaching value, but I shall discuss it for two reasons. It is a good illustration of what I have been speaking about, and you say that you will come to it next month, and want to know how to teach it. The fact that you are planning your work a month ahead is laudable.

Given $x + \frac{1}{x} = 2.$ Evaluate $x^3 + \frac{1}{x^3}$

Now if we wished to DO the problem the easiest way, we would proceed thus:

$$x + \frac{1}{x} = 2$$

Clear of fractions: $x^2 + 1 = 2x$

transposing: $x^2 - 2x + 1 = 0$

solving: $x = 1$

then $x^3 + \frac{1}{x^3} = 1 + 1 = 2$

The above method possesses little teaching value. Ask the pupils what they must do, or could do, with

$x + \frac{1}{x}$ to give at least some of the terms in

$x^3 + \frac{1}{x^3}$. The answer is obvious. It must be cubed.

Now: $x + \frac{1}{x} = 2$

cubing: $x^3 + 3x + \frac{3}{x} + \frac{1}{x^3} = 8$

re-arranging: $x^3 + \frac{1}{x^3} + 3x + \frac{3}{x} = 8$

also; $x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 8$

But $3\left(x + \frac{1}{x}\right) = 3 \times 2 = 6$

then $x^3 + \frac{1}{x^3} + 6 = 8$

transposing: $x^3 + \frac{1}{x^3} = 2.$

Again: Point out to the pupils that the expression $x^3 + \frac{1}{x^3}$ is the sum of two cubes, and is factorable.

Factoring: $x^3 + \frac{1}{x^3} = \left(x + \frac{1}{x}\right)\left(x^2 - 1 + \frac{1}{x^2}\right)$

Now we know the value of $x + \frac{1}{x}$ and if we knew the value of $x^2 - 1 + \frac{1}{x^2}$, we could write down the value of $x^3 + \frac{1}{x^3}$.

Let us get a value for $x^2 - 1 + \frac{1}{x^2}$

Given; $x + \frac{1}{x} = 2$

Squaring: $x^2 + 2 + \frac{1}{x^2} = 4$