THE LIMIT.

The fat proprietor of the confectionery shop was puffing and blowing, and his face had taken on the color that is usually associated with ripe tomatoes, as he laboriously placed in position the last shutter in front of his shop-window.

At this moment he felt a touch on his arm, and when, by an effort, he turned his perspiring face and fixed his eyes on the little girl who stood waiting for his attention, she asked, in a delightfully expectant manner:

"Please will yer take the shutters down again, as I want to see what to spend me 'apenny on?"

WHAT IT MEANT TO HIM.

The temperance reformer was justly proud of having converted the biggest drunkard in the town, and induced him—he was the local gravedigger—to get up on the platform and testify. This is how he did it:

"My friends," he said, "I never thocht to stand upon this platform with the Provost on one side of me and Toon Clerk on th' ither side of me. I never thocht to tell ye that for a whole month I've not touched a drop of anything. I've saved enough to buy me a braw oak coffin wi' brass handles and brass nails, and if I'm a teetotaller for anither month I shall be wantin' it."

SMILE RAISERS.

Mr. Newlove: "This lettuce tastes beastly—did you wash it?"

Mrs. Newlove: "Of course I did, darling—and I used perfume soap, too!"

"Mamma, I'm afraid you don't know much about bringing up children, do you?"

"Why do you think that?"

"Because you always send me to bed when I'm not sleepy and make me get up when I am sleepy."

Teacher: "Why are you late?"

Jimmy: "Please, ma'am, it's so icy. Every step I took, I slipped back too."

Teacher: "Then how did you get here?"

Jimmy: "I started back home."

A woman met with an accident, which concerned escaping gas and a lighted match. When her husband came home and found her in bed as a result, he said:

"But, my dear, you surely should have known that it was unwise to go looking around for escaping gas with a match."

"I did, dear," replied the wife, "but I took a safety match."

Professor: "What three words are used most among college students?"

Weary Pupil: "I don't know."

Professor: "Correct."

Bore: "Yes, I don't know how it is, but I feel thoroughly wound up to-night."

Hostess: "How very strange! And yet you don't seem to go."

Bobbie: "My father must have been up to all sorts of mischief when he was a boy."

Johnny: "Why?"

Bobbie: "'Cos he knows 'xactly what questions to ask me when he wants to know what I've been doing."

SCIENCE SIFTINGS

(By "VOLT.")

Wireless Explained.

Mile-long waves which travel so fast that they could go round the world seven times in less than a second—these are the things we are reading about daily—the electric disturbances set up in space, or in the "aether" which fills space, by wireless aerials spotted all over the world (writes T. Thorne Baker in the *Daily Mail*). If you strike the middle C on a piano, and the C an octave below, a person standing some distance away will hear both notes simultaneously, yet the middle C sets up twice as many air waves a second as the lower C; the sound travels at the same speed, the wave-length is different. Just the same with wireless signals. One transmitting apparatus may send out waves a thousand metres long, another five thousand metres. Both travel at the same rate, about 186,000 miles per second, but the longer waves are more suitable for long-distance transmission. A metre is rather more than a yard, and the early wave-lengths employed in wireless were 300 and 600 metres: the former for short distances, the latter for longer ones. Very much longer waves are in frequent use to-day.

We often read of people who are "listening-in" for messages, and that they get into touch with—i.e., are able to listen to—the signals from some particular station by tuning. We all know how a certain glass, cup, or vase in a room will ring in sympathy with a certain note struck on the piano—because, if struck or tapped, it would itself vibrate and give out the same note. This phenomenon of resonance will cause anything to vibrate whose natural rate of vibration happens to be that of the note struck. A tuning-fork, for instance, which gave the note C would vibrate, very faintly no doubt, if held near a musical instrument on which the same C was struck.

Now imagine a tuning-fork the prongs of which could be lengthened or shortened at will, so that whatever note was struck—i.e., whatever length of musical wave was sent out—you could adjust the fork to respond to it. Translate sound-wave phenomena into electro-magnetic (or wireless) wave phenomena, and your tuning-fork becomes the tuning inductance with which you can make your receiver respond to whatever length of wireless wave the station is sending out.

For good technical reasons wireless wave-lengths are measured in metres, and when we read of a thousand-metre wave it means that the length of each disturbance sent through space with the inconceivable velocity of 186,000 miles a second is some thousand yards in length. Seventeen of such waves would bridge the space between two wireless stations 10 miles apart. The receiver would tune his circuit to respond to a thousand metre wave-length. These waves do not follow each other with the grandiose solemnity of sea waves; in wireless telephony a hundred thousand of them may come flashing by in the course of a second. So delicate is the receiving apparatus of to-day, that little interference is caused through the hundreds of messages that are crossing space at one and the same time, with many a different wave-length.

Methods of tuning are highly refined though intensely simple. Directional devices have also helped considerably in this way. Yet it seems wonderful that while a separate pair of wires is needed for every telephone circuit, at work, innumerable people could speak by wireless through the common aether without interference, save that "listeners-in" would be able to gather up innumerable fragments of their conversation.