

subscribers increases the trouble of managing the business enormously. If, for instance, you have fifty telephones and fifty subscribers, you can supply them cheaper and easier proportionately than 1,000 telephones and 1,000 subscribers. The original fifty in the last instance can talk with twenty times as many people, and the remaining 950 can talk with them. There is no proportionate decrease in expense. What we should have would be a charge for telephones in proportion to the number of times they are used, and to the length of the conversations through them. If we had this, there would be fewer servant girls gossiping over the wires, and the expense would be paid by the people who received the benefit. As to the cost of telephones, it is not the telephone itself that costs so much. It is the machinery in connection with it. We have just put in a new switch board in Baltimore, which cost us \$85,000, and we have everywhere expenses proportionately great. But as to this matter I have nothing to do. I know nothing as to the financial working of the invention. I have no knowledge of financial matters, and I don't like to talk business."

While in the laboratory I picked up from one of the shelves a piece of pine board about half an inch thick and eight inches square, out of the center of which extended a speaking tube, which apparently rested against a thin disk of bright metal sunken into the opposite side. This metal was like a silver mirror, and was about as large around as the bottom of a tumbler. I asked Mr. Bell what it was, and he told me that it was the instrument with which he discovered that he could talk from one point to another through the medium of a sunbeam, or in other words, could send sound along a ray of light without the aid of the electric wire. He took the instrument and put the tube to his mouth, holding the mirror so that it caught the sun, and cast a little shadow-disk of light on the opposite wall. Then by breathing slightly he made this shadow increase and diminish and go into all forms of shape by the action of his breath against the mirror diaphragm. "That shows you," said he, "how the action of the diaphragm is carried along that ray. Now if you will put a little bottle with some soot in it where that shadow is on the wall, and speak into the tube, you will find that the sound will travel along that ray of light, and by having a receiver connected with the bottle, one would be able to hear what you were saying. We have spoken by this means to and from points 200 yards apart, and there seems to be no reason to doubt that speech may be sent along a beam of light for great distances. In our experiment in this we first used selenium, a very rare substance, and very sensitive to light. We have found, however, that we can produce very good results with common soot, and discoveries may yet be made which will make such an invention commercially practicable."

Upon the back of this board I read the record of the invention, stating the time when it was discovered, and signed by Alexander Graham Bell and Sumner Tainter. As I looked at it I asked Mr. Bell as to whether he always recorded a discovery as soon as it was made, and told him of a recent interview which I had with Mr. Charles Brush, the inventor of the electric light, in which he told me that such records had proved to be of enormous value to him.

Mr. Bell replied that he tried to do so, but the excitement at the moment of discovery was so great that he often forgot it.

He showed me that in this very case the record had not been made until two days after the discovery. He said, however, he had been very careful in patenting his inventions in America first in preference to foreign countries, and that through this had come to a large extent his success in the protection of his patents. I asked him some questions about his work, and he told me that his greatest pleasure came from it. He carries on all his investigations at night, beginning in the evening, and seldom going to bed before 4 o'clock in the morning. He leads in fact, two lives—one by day, that of the ordinary man, and another by night, that of an inventor. He finds the quiet of the night conducive to study, and that his sleep from 4 a. m. until 11 is amply sufficient to keep him in good health, and as restless as that which other men take in the dark.

Frank G. Carpenter

A CHAPTER ON TRADE.

The drift of our times in trade circles has become so decidedly competitive that certain great and serious evils have arisen, the main of which may be recognized under the garb of adulteration and misrepresentation.

The old staid reliable confidence once so general is not far from obsolete, more particularly in this land of invention, speculation and greed; "how cutting, underselling and fraudulent practices have kept pace with each, to cheapen has been the unworthy ambition of many in trade, who claim that the great purchasing public are indifferent to quality and anxious only as to price.

Where after years of experience, honesty and care, a brand of any kind has achieved renown on account of quality and uniformity, there has arisen a host of imitators, who copy packages, labels and names with but a little variation, just enough to deceive the eye and so float an article upon the market which is generally inferior and fraudulent in its case.

Registration affords only a motley of protection and when recourse is had to the law, there is so much technicality, uncertainty, delay and expense, that when an injunction is reached, it may fail in enforcement unless there is a fortune behind to sustain it. When money is absent the trimmer, the adventurer, the dishonest imitator may reap the reward which belongs of right to originality, discovery or invention.

To such an extent has this infamy grown that Congress and the legislatures of several states have endeavored to meet an evil now become so rampant as to threaten the health and interests of the people at large.

There is no disposition to interfere with trade as trade, or with a buyer exercising the power of choice as to what he shall buy, but to so regulate it that he shall have protection and a curity in getting that which he desires or for which he pays.

The first great national fight, or the controversy of most note, was waged

over the article of oleomargarine. All that intelligent farmers asked and all that a thoughtful public desired was that as a substitute for butter it should be sold on its merits, that its constituents should be known, and that deception should be made as near impossible as law and supervision could do it; but the dealers wanted to sell it as butter, to do so without brand, label or explanation, and so that where food was dispensed they could place his upon their tables without intimidation and in the spirit of avarice and deception.

This involved a long struggle, meanwhile millions of pounds entered into consumption. Utah had its share with others, and the manufacture so grew that export had to relieve a glutted market of its supply; and today while there may be no objection to the sale or use of margarine or a concoction under any other name, to sell or present it as butter subjects the offender to a penalty imposed in favor of the farmer and as a protection to the otherwise unwitting consumer.

This agitation bore fruit though in many unexpected directions. The people began to realize the immensity of this ever-encroaching spirit of fraud and deception; genuine goods were beginning to be rare; mixing and adulteration became a positive science; to cheapen, deceive and plunder was to be successful for the time, and standard goods whose warrant had stood the test of years were being superseded where glib-tongued, unscrupulous salesmen pushed the spurious or low-priced product of indiscriminate adulteration.

As a measure of self-protection and for the public welfare, the best and most scrupulous of tradesmen seconded the efforts of legislation in the desire to guarantee "pure foods" to the general buyer; and today the large cities of the country vie with each other in presenting and popularizing "Pure Food Exhibits." These have been held in Chicago, New York, Boston, Philadelphia and many other cities, where hundreds of thousands have become visitors, and as part of the program, have become so educated as to discriminate between the bogus and the real.

These gatherings have also been utilized in the interest of domestic economy, by practical lectures on the cooking and preparing of food supplies, particularly that almost endless variety now put up in portable form and reachable even by the poorest, who can now secure that variety of healthful aliment which years ago was beyond their reach. Not that everything of that kind is as yet beyond suspicion, but the drift of public sentiment and of the best trade is to insist that whatever is offered for food shall be so labeled or branded that the purchaser can really get just what he desires or expects.

This is all within the legitimate province of legislation, and even local supervision of markets is subservient to the same idea. Food unfit for use or misrepresented in the market is no more subject to confiscation or destruction than that should be which in a less accessible form often loads the shelves of low grade stores, which in their anxiety for patronage buy and then foist upon the poor or upon the