

SCIENCE TELLS US

By *René Bache*

Congress to Ban "Cheat" Bottles And Containers

Congress is making an effort to do away, by legislation, with certain forms of fraud which have become so familiar that the public at large has almost ceased to take notice of them.

One of these is the bottle with a bottom so shaped as itself to occupy a large fraction, maybe as much as one-third, of what ought to be space available for fluid contents. Olive oil bottles are usually made on that deceptive principle. Another is the bottle, commonly used for cherries, strawberries or olives, which is made of extra-thick glass, the latter incidentally serving to magnify to the eye the individual fruits. Another is the "slack-filled" carton, a term applied to a paper or pasteboard container, which, while actually holding the net weight of product declared on the label, looks as if its contents were much larger than they are in fact.

Spaghetti is commonly put up in these deceptive packages; likewise candy, which is sometimes packed in boxes with false bottoms. In some instances the contents are wrapped in extra heavy paper, to help fill the cartons. Oatmeal, rice, macaroni, pepper, spices and other condiments "faked" in this way are on sale at every grocery, the object sought being to mislead the purchaser as to the quantity he gets for his money. When the law was made requiring that every container of food should declare on its label the net weight of its contents, an effective embargo on cheating was thought to have been established. Attempts to evade that regulation have been few, because too dangerous. But clever rogues soon saw a way to get around the obstacle thus placed in their path.

The whole idea of the "fake" bottle and "slack-filled" carton is based upon the fact that the average purchaser does not take the trouble to examine the weight statement on the label. He—it is usually she, of course—judges the quantity of the contents by the looks of the package. She thinks in quantity rather than in terms of weight, and so is deceived.

Cheats of this kind have multiplied enormously during the last few years. Canned tomatoes and certain other tinned foods often contain an excess of water or other liquid, increasing their cost to the consumer. Now congress proposes to enforce the use of standard bottles and cartons, which, it is thought, will serve to remedy the mischief.

Music Roll Pictures.

A novel attraction for player-pianos is to be a pictured series of grotesque animal and human heads, which appear to open their mouths when the keys of the instrument are depressed. The heads form a row along one face of a patented box containing a music roll. When the box is laid along the white keys the funny faces are flush with the front edges of the latter, and, inasmuch as the lower jaws are omitted, the animals and queer people seem to be opening and shutting their mouths with the fall and rise of the keys. Just nonsense business, of course, but amusing. The box, it should be said, is made just wide enough to fit in front of the black keys and lie flat on the white ones.



Keeperless light on Lake Superior

Automatic Beacons Flash Weird Warnings to Mariners

There has been a good deal of trouble recently about the lights set up for the benefit of mariners in the Philippines, where on many small outlying islands our lighthouse service has established automatic flash apparatus.

The contrivance used for the purpose operates itself, showing a brilliant warning light at regular intervals of a quarter of a minute or half a minute. Native savages are disposed to regard the phenomenon as black magic, attributing it to evil spirits, and in a number of instances they have evinced their disapproval of it by smashing the installation.

Within the last few years the lighthouse service has installed hundreds of these automatic lights along the shores of the Great Lakes, on the gulf coast and in Atlantic and Pacific harbors. Several of them have been newly set up at points on the Hudson river.

Three, which are visited only once in six months, are located on rocks far out at sea off the coast of Honduras. One, in the Hawaiian archipelago, has not been extinguished for 10 years, save on occasions for readjustment. There are a number of them in Alaskan waters.

These keeperless light stations cost so little to run that they represent a great saving to the government. Furthermore, thanks to the cheapness

of the method, lights can be multiplied to an extent that would hardly be practicable if men were required to operate them. Acetylene is the illuminant employed, a tiny flame burning all the time, while an ingenious mechanism actuated by the gas produces a bright flare at regular intervals.



A light carrying steel caisson, Chesapeake Bay. A bell is to be mounted on it

Some of the lights, however, are so arranged as not to flare during the day, the device used to gain this end consisting of three small metal bars. Two of the bars are gold-plated to reflect light. The third is blackened, so that it may absorb the rays. Consequently, when daylight comes the black bar expands and lengthens slightly, while the others do not, and thus is produced an energy sufficient to close a valve and shut off the acetylene. At nightfall the black bar contracts, the valve opens and the intermittent flare is resumed.

A new type of structure for carrying an automatic light supplemented by a warning bell has already been set up in the Chesapeake and in a few places elsewhere. It is a steel shell, which is set upon the sand of the bottom. When the sand is pumped out from the inside, causing it to sink, the wood piles are driven inside of it and cut off at the water level; the water is pumped out of it, and it is filled with concrete. A hollow chamber, however, is cast in the concrete to contain acetylene tanks.

The structure carries a flarelight. But to provide for occasions when fog might render the light invisible, a bell is mounted on the concrete "deck" of the steel caisson, a piston energized by the intermittent escape of soda-water gas from a reservoir on top of the bell causing the clapper to strike a loud note at regular intervals.

Flaming "Torch of Mars" Fresh Horror Developed in World War

The airplane has lent a fresh horror to warfare by rendering it practicable to set fire to enemy property over unlimited areas beyond the fighting front.

"Incendiaries" (as they are called) suitable for this purpose had not been developed to any great extent up to the outbreak of the late war, but during that gigantic conflict they were multiplied and made incomparably more efficient.

Even now our own chemical warfare service is working hard at the problem, in the expectation that in the next war such agents of destruction will be employed much more extensively.

Early in the recent war phosphorus naturally suggested itself as an incendiary agent. To put it into effect almost impossible, and a small pellet of it falling upon a man will inflict painful burns that take weeks to heal. Hence the common use of phosphorus bombs.

A solution of yellow phosphorus in carbon bisulphide will take fire of its own accord on exposure to air. The mixture finally decided upon as best by our chemical warfare service, for use in "drop bombs," consists of these two ingredients, together with benzene, heavy oils and a small quantity of TNT.

This compound was tested by hanging a can of it from a support and firing rifle bullets through the can. A stream then issued without ignition until the liquid reached the ground, when it took fire as it read. Thrown upon water it spreads rapidly and burns fiercely, but for this sort of use, to insure ignition, small chunks of sodium (which is set on fire by contact with water) are added.

A mixture of lubricating oil with 25 per cent of ammonium nitrate gives, when discharged from bombs, immense flames which burn for 10 or 12 minutes. This compound, used together with "thermit," proved the most effective "incendiary" during the war.

Thermit has familiar industrial uses. It is composed of aluminum and iron rust, both finely powdered and thoroughly mixed together. When raised to high temperature by the setting off of a small charge of high explosive, the oxygen in the iron rust rushes over to the aluminum particles (for which it has greater chemical affinity) with such violence as to convert the whole mass into a flaming fluid.

The newest "type" bomb developed by the chemical warfare service is loaded with thermit, supplemented by sodium nitrate and a solid oil. The thermit liquefies the oil, so that by the time the container is burned through and melted, there is a tremendous burst of flame.

Human Hair Ropes

In the great Hongwanji temple at Kyoto, Japan, are preserved 29 immense ropes made of human hair. They represent voluntary offerings of tens of thousands of Japanese women.

The temple is as large as a European cathedral. Ninety-six massive pillars support the roof at a height of 12 feet.

The ropes for the great structure were all dragged from the mountain forests and lifted into their places by the above-mentioned ropes, for which no material other than human hair was considered sufficiently honorable.

Most of the bombs dropped by the Germans in England carried thermit. The British "baby incendiary bombs," extensively used during the war, was loaded with the same destructive mixture, to which barium nitrate was added. These babies weighed only six and a half ounces apiece and were packed in a tinned iron container which, according to size, held from 144 to 270 of them. One Handley-Page bombing airplane could carry 16,000. They could be dropped in the container, to fly in all directions when explosion followed impact with the ground.

The chemical warfare service has suggested to our Navy department the possible advisability of using "incendiaries." If it were desired to set fire to coast cities by long-range bombardment, they would be very useful. But, for the present at least, the navy men are not inclined to accept the idea. They prefer high explosives.

A Refrigerator Which Is Iceless

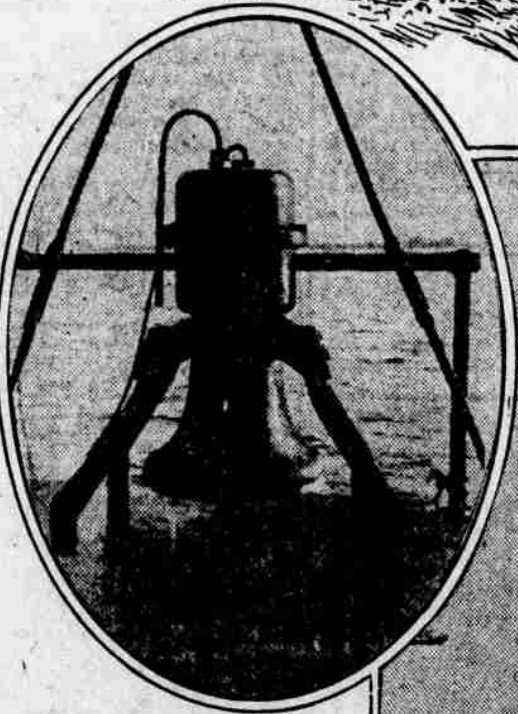
Anybody who has lived on board ship in the tropics knows what a "water monkey" is. Indeed, the contrivance is in rather common use on land in hot latitudes. It is a receptacle of porous earthenware with a capacity of some gallons and filled with water is hung up in a shady and breezy place. Thereby evaporation is encouraged and the water is sufficiently cooled to be palatable for drinking.

A new kind of iceless refrigerator based on the same principle is the invention of Milton A. Snider of Detroit. It is made of porous earthenware in sections that fit together, one advantage of the sectional arrangement being that the affair can be handled and moved about with less danger of breakage. The material of which it is made is rendered less fragile, however, by wires running through the walls to serve as "water monkey" keys. It has a tightly fitting cover (with a knob on top for lifting the latter off), and this cover is reinforced by wires in the same way. The cover and the sections interlock by tongues that fit into grooves, so as to fit tightly and securely together. And around the interior of the refrigerator run ledges upon which rest wire shelves for the accommodation of articles of food.

In use the sections are first immersed in water until well saturated. Then they are put together and the refrigerator is placed near a window or in some other place where it will be exposed to a current of air, thereby encouraging evaporation. The more rapid the evaporation the cooler will be the interior of the contrivance, and the cooler the walls are thus secured continuous operation of the device narrow ring-shaped troughs that run around the outside of the refrigerator are supplied with water from time to time.

An Ambulance for Lambs.

In Canada a motor ambulance especially designed for the care of sheep, has been developed. It is a highly valuable adjunct to an enormous sheep ranch in Alberta. During the past season 7,000 lambs were born on the ranches, and the busy ambulance was the means of saving the lives of hundreds of them.



Warning bell operated by soda-water gas which sends its call across the water, telling the mariner he is in a dangerous locality



Automatic light on Prince William Sound, Alaska

Always Keep Smiling, Hint of Tetrassini to Singers After Fame

By MADAME TETRAZZINI. (A few extracts from "The Tetrassini's Fortunate Moments," by "My Songs.")

London, Sept. 10.—Where are the great singers who shall take the place of Patti, Melba, Jenny Lind, Tietjens, and those other prime donne of the glorious past? Occasionally a new star appears in some corner of the globe, hear the name mentioned, and I say to myself: "Has the new prima donna actually arrived?" I wait and wonder.

When I was singing in Spain, my hopes rose high. A young singer came to me and asked me to hear his voice. I listened and secretly exulted. "Yes, I have found her," I said to myself—"the new international prima donna. She is a genius."

Notes Undeveloped. Her voice climbed to the sky without an effort. The timbre and quality, the easy bird-like notes, were such as are only commanded by the great ones of the earth. But her notes were not quite developed; she could not then produce all the variety and beauty of tone without more study, more hard work, long hours of training, of rigid application, of self-control—yes, of self-sacrifice.

Not suspecting her real thoughts, I told my young genius what she must do and continue to do if she would be truly great. Her answer left me sad and sorrowful. "What?" she exclaimed. "You say I must start training over again? Are you aware, madam, that I am a great artist?"

What could I say in answer? Here was an undoubted genius, one with the makings of an international prima donna, but so help-opinionated and unyielding to be helped by someone qualified to assist her in the

offense at hearing the truth. I bowed and said: "Oh, beg your pardon for my presumption." And she went away.

Today she is making her living as a professional singer at second-grade concerts in her native country. No one outside Spain seems to have heard of her name. Yet she might have been a Jenny Lind or a Patti today.

Just a Few Hints. Many of my correspondents write to ask me to give them some hints as to how to become a famous singer. One day I may write a book on this subject. In this, "My Life of Song," I have no space to give more than a few hints. I counsel every singer, whether on the stage or off it, to lose herself in her song, as I invariably do when singing. I am the joyous girl in a pretty garden in far-away Italy; I am a daughter of Greece, wandering, pensive, in the shade of a noble temple, or I am the wild-hearted French maiden sorrowing for my ungrateful lover.

Whatever role I am singing I actually become that person. Even then, one must temper feeling with reason. Sometimes when the dramatic situation demands sadness I forget myself to such an extent that sob's choke my throat, tears fill my eyes, and my voice almost breaks. The singer must never let herself go so far. When this happens, I have to take hold of myself suddenly. "Ho, Tetrassini, I say, 'what are you doing?'"

Then my voice clears and I am the character again, but the character under the control of Tetrassini.

Always Smile Slightly. In studying a new song I am in the habit of practicing in front of a mirror in order to get an idea of the effect of a facial expression and to

see that it does not take away from the correct position of the mouth. When singing, always smile slightly. This slight smile at once relaxes the lips, allowing them free play for the words which they and the tongue must form. It also gives the singer a slight sensation of uplift necessary for singing. It is impossible to sing well when mentally depressed or even physically indispensed. Unless one has complete control over the entire vocal apparatus, and unless one can simulate a smile one does not feel, the voice will lack some of its resonant quality, particularly in the upper notes.

Be careful not to simulate too broad a smile. Too wide a smile often accompanies what is called the "white voice." This is a voice production where a head resonance alone is employed, without sufficient of the appoggio, or enough of the mouth resonance to give the tone a vital quality. This "white voice" should be thoroughly understood, and is one of the many shades of tone a singer can use at times, just as the impressionist uses various unusual colors to produce certain atmospheric effects.

For instance, in the mad scene in "Lucia," the use of the "white voice" suggests the babbling of the mad woman, as the same voice in the last act of "Traviata," or in the last act of "La Boheme," suggests utter physical exhaustion and the approach of death. An entire voice production of these colorless lines, however, would always lack the brilliancy and the vitality which inspire enthusiasm. One of the compensations of the "white voice" singer is the fact that she usually possesses a perfect diction.

Eyebrows and Eyelids. The singer's expression must concern itself chiefly with the play of emotion around the eyes, eyebrows, and eyelids. Yet complete emotional scale can be symbolized by these features. A very drooping eyebrow is expressive of fatigue, either physical or mental. This lowered eyelid in the aspect we see about us most of the time, particularly on people past their first youth.

As it shows a lack of interest, it is not a favorite expression of actors, and is only employed where the role makes it necessary. Increasing anxiety is depicted by slanting the eyebrows obliquely in a downward line toward the nose. Concentrated attention draws the eyebrows together over the bridge of the nose, while furtiveness widens the space again without elevating the eyebrows.

In the eyebrows alone you can depict mockery, every stage of anxiety or pain, astonishment, ecstasy, terror, suffering, fury, and admiration, besides all the subtle tones between.

One word on the subject of corsets. There is no reason in the world why a singer should not wear corsets, and if singers have a tendency to grow stout a corset is usually a necessity. A singer's corset should be especially well-fitted around the hips, and should be extremely loose over the diaphragm. If made in this way it will not interfere in the slightest degree with the breath.

Never Wears Collar. Though every singer must take care of her health, she need not necessarily wrap herself in cotton-wool and lead a sequestered existence. At the same time, one cannot retain a position of eminence in the domain of song and also indulge in social dissipation, and what agrees well with me would cause others to fall ill. I eat the plainest food always, and naturally, being Italian, I prefer the foods of my native land. But simple French or German cookery agrees with me quite as well. And I allow the tempting pastry, the rich and over-spiced patry, to pass by untouched, consoling myself with fruit and fresh vegetables.

Personally, I never wear a collar, and have hardened my throat to a considerable extent by always wearing slightly cut-out gowns in the house, and even when I wear furs I do not have them closely drawn around my neck. Fresh air has been my most potent remedy at all times when I have been indisposed.

"No, I'm not dead, Ellen—and I've ridden your road last." Hours later the fog cleared with the waning afternoon and the coast basked again in turquoise and amber, Walking Ann dragged weary feet to the camping place in the canyon.

THE ROAD OF HATE

Continued From Page Three M.

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of 30 years before asserting itself in that appeal to her stronger sister. But Terry went remorselessly on.

"No consideration of my feelings, no consideration for our neighbors, or for anything but your own stupid hot-headed hate."

"Terry—remember I am your mother!"

"If I were not remembering it I should be saying a great deal more," he answered. "After this one thing is understood, the Nacimiento Ranch is mine and I shall run it as I see fit."

"You turn your poor mother out of her own home," wept Mrs. Donohue.

"My mother will always have a home in my house and my wife will make her welcome—I shall see to that. Lucy," he turned to where the girl waited, "pack everything you can rightly call your own and be ready in 15 minutes. We will drive to San Luis and be married this afternoon."

"Lucy—I ejaculated Mrs. Glynde, but from halfway up the stairway the girl faced her in a stillness of exaltation.

of 30 years before as if all that had since happened were wiped out.

"His father's temper, Jane." "Yes, poor Terence always did just what he wanted and here was no changing him—as you well know, Ellen."

"You were never fitted to bring up a son," Mrs. Glynde went on, with a stray trail of jasmine falling over one ear, Jane Donohue flashed back in weak asperity:

"Not a word against Terry; I won't have it. He's quite right and a better son never stepped, and if your Frank there had the spirit to talk to you like that he'd be a different woman today, Ellen."

"Jane, how did you come to think of doing such a senseless thing as this?" her sister demanded.

"I didn't; it was Walking Ann who suggested it." Now, in the evening quiet of the canon, sipping her coffee and closing her eyes, Ann dwelt long and deliciously on that moment. The cold colors of the leaded glass in the front door, the staircase and the fretwork carvings herself, with sunbonnet, blanket, and star, the center of all eyes as with meekly downcast gaze, she dropped a decent curtsey.

"Yes ma'am; I be the 'good woman' as sot by your gate, Miss Glynde." She had gone at that, out of the door and down to where Terry awaited Lucy, pacing solitary under the fog-dripping cypresses that approached took courage, for in that moment even the friendly men who had accompanied him were leaving him alone. Ann marched straight up, secretly glorying in what she had aroused in him.

bones and give thanks as I had the sand."

"You have estranged me from my own mother," Terry accused. "That's all you know about it," retorted Ann. "Your ma's in there a stickin' up for you agin' Ellen Glynde right now."

"She is?" he exclaimed. "She sure is. And let me tell you this, lad; there never was a body yet as amounted to anything until your first took and wrang the neck of their family in some way or other. And the harder and quicker they does it the more their family thinks of 'em."

She left him to think that over, stalking away into the fog, a self-reliant old figure that gradually dimmed until the drifting vapors hid her entirely.

"Them was true words as I spoke. True as gospel, a bit bitter in the mouth, as the Book says, but sure sweet in the belly."

"That Ellen and Jane," she pondered on. "There won't be no separatin' 'em after this. They'll live on there, maybe for 20 years, havin' a good time a pickin' each other. But thanks be I made a man and a master out o' Terry Donohue this day."

She sat on in such still serenity that a little Kangaroo rat ran out on a log at her feet, dashed at a fragment of cracker, and hopped off again, carrying its treasure in its tiny forepaws. A lonesome sounding breeze sighed down the canon, sending a brown sycamore leaf swirling to Ann's feet.