

SCIENCE TELLS US

By René Bache



Copyright, 1921, by Public Ledger Company

Uncle Sam Builds Paper Mill For Siam; Forwards Engineer and Supply of Spare Parts

SIAM is a small country, but progressive. It has a well-equipped modern army. The army needs a paper mill.

In the management of an up-to-date military organization a great deal of paper is used, for writing and printing. Paper-making processes in Siam are rather primitive. Hence the notion of buying the requisite equipment for a paper mill in the United States, shipping the machinery half around the world, and setting it up at Bangkok.

The United States Bureau of Standards was asked to give its advice in the matter, and, as a result, a first-class mill was constructed, capable of producing 1,200 pounds of paper daily. It is patterned after a mill now at the bureau in Washington, which has been in operation for experimental purposes since 1913, but is 50 per cent bigger.

The mill is now on its way across

the ocean. It is complete in every detail, and spare parts and supplies are included in the shipment. With it goes a trained papermaker and engineer, who will superintend the erection and operation of the mill.

A former Siamese envoy at Washington, while paying a visit to the Bureau of Standards, saw the experimental mill there installed, and thus got the idea of acquiring an American paper factory for his own country.

The mill, when set up at Bangkok, will be used partly for experiments in paper-making, to develop the possibilities of certain Siamese grasses, weeds and other fibrous plants for the purpose.

Mammoths Killed By Starvation, New Theory

MANY of the mammoths found frozen in Siberia have broken bones or show signs of other injuries, suggesting that they were killed by landslides or falls into crevasses.

It has long been accepted as fact that those huge proboscideans were specially fitted by nature to withstand severe cold. But a newly published Smithsonian report offers a different theory.

The idea it advances is that in the days when the mammoths flourished in Siberia and northern America the climate of those latitudes was comparatively mild. It was a great invasion of cold that destroyed them. If they had been able to migrate southward into warmer regions, they might have survived even to the present time; but, as it happened, they succumbed to low temperature.

An incidental effect of the change of climate was to impoverish the vegetation on which they relied for food. Cold rains converted their bristly fur into cloaks of ice. They starved and froze, and so they passed away.

When they perished, conditions were such that their carcasses immediately froze solid, and in that state they are found today—the most remarkable example of cold storage on record, inasmuch as not fewer than 150,000 years have passed since the beasts died.

The tusks of the mammoth were huge, even out of proportion to the size of the animal, and so curved that in many individuals the tips were directed sideways or backward. Thus they could not have been efficient as weapons, and it is hard to imagine what use they really served.

Longer Life Ahead For Girl Baby Than Boy

THE Life Extension Institute says that "whereas the normal span of human life is supposed to be 70 years, the average citizen of the United States lives only 51 years."

This suggests a dip into the figures of the life insurance companies, which offer some interesting data.

For one point, women live longer than men. Their "viability"—meaning ability to survive—is greater. They show it through all ages, from infancy onward. More male babies are born than females, but at the end of the first year of life the surviving females outnumber the surviving males.

Take 1,000 male babies born alive. Half of them will be dead before reaching the age of 52. But of 1,000 females half will be alive in their 57th year.

Of 1,000 males born, 733 will be living at 10 years of age, 713 at 20, 669 at 30, 239 at 70, 80 at 80 and 27 at 90 years.

Thus it appears that in an average group of males one in four will die before reaching 10 years; one in three will die before attaining the age of 31; one in two will not pass 50, and six out of 10 will fail to reach 60.

A man of 60 has three chances out of five to reach 70, but only one chance in five of reaching 80 years.

Take 1,000 men 50 years of age. Seven hundred and seventy of them will be alive at 60, 461 at 70, 155 at 80 and 13 at 90.

Now that we have invaded the domain of the air, new uses are constantly being found for the flying machine. The latest is bug-killing, airplanes being employed to spray tobacco fields and destroy with insecticidal chemicals the caterpillars preying upon the plants.

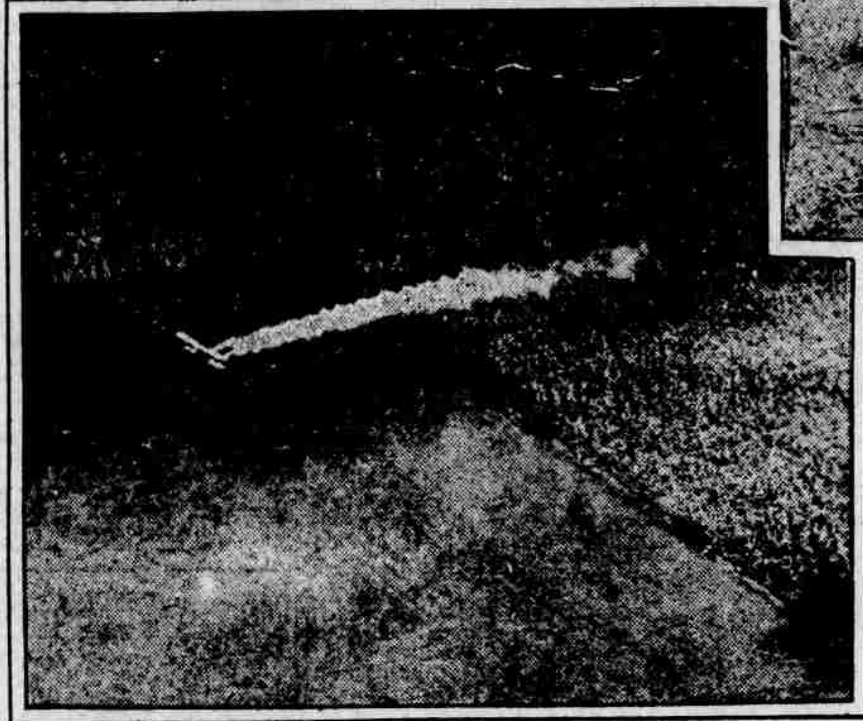
Seal hunters in Canadian waters, along the Atlantic coast, have hitherto been obliged to depend largely upon luck for locating the migrating herds. Now they look for them with planes, and on a recent occasion they were thus enabled to bag great numbers of the animals through discovery of their presence on ice-floes hundreds of miles from land.

Similarly, the United States fisheries bureau is making a business of

New Uses Being Found for the Flying Machine



Telescopic airplane camera



Spraying insect pests from the air

THE air service of the United States army is developing the business of aerial photography to an extraordinary extent. At the various flying fields whole flocks of flying machines are sent up to take pictures, the work being done exactly as in war. Exposed plates are delivered from the planes by parachutes, to be thereupon carried by swift motorcycles to headquarters for immediate development, enlargements of the prints being put together to form maps.

locating, by airplane observation, schools of food fishes, the whereabouts of which are communicated to the fishing fleets.

In the meantime, the Forest Service is regularly patrolling the national forests with flying machines, looking out for fires. When a fire is discovered, the plane makes a dash for the nearest headquarters, from which gangs of men immediately set forth with fire-fighting tools to combat the flames.

On a recent occasion a boy was drowned in a lake in Oregon. There was at the time no certainty as to the fate which had befallen him. But the question was soon settled by a forest service plane, which, buzzing to and fro over the lake, finally discovered the body. The aviator, flying at a considerable height above the water, saw it lying on the bottom.

Speaking of military photography from airplanes, a curious story is told of a hidden German gun in the Argonne, which the Americans were unable to locate. Meanwhile, it was doing a lot of damage.

A gun, to be kept working, must be regularly supplied with ammunition. Telescopic cameras were used

to photograph the area in which, somewhere, the weapon was surely located. By this means were disclosed the tracks of a truck which brought the ammunition at night, the tracks leading to a place in the forest where the leaves of the trees were withered—evidently by heat from the gun.

Thus it became known where the gun was. But the weapon was operated from a distance by a buried wire. Further photography showed that a line of recently disturbed earth (presumably hiding the wire) led to a house, and beyond that to a dug-out. When all these things had been ascertained, the house and the dugout were simultaneously blown up with bombs.

to photograph the area in which, somewhere, the weapon was surely located. By this means were disclosed the tracks of a truck which brought the ammunition at night, the tracks leading to a place in the forest where the leaves of the trees were withered—evidently by heat from the gun.

Thus it became known where the gun was. But the weapon was operated from a distance by a buried wire. Further photography showed that a line of recently disturbed earth (presumably hiding the wire) led to a house, and beyond that to a dug-out. When all these things had been ascertained, the house and the dugout were simultaneously blown up with bombs.

Now that we have invaded the domain of the air, new uses are constantly being found for the flying machine. The latest is bug-killing, airplanes being employed to spray tobacco fields and destroy with insecticidal chemicals the caterpillars preying upon the plants.

Seal hunters in Canadian waters, along the Atlantic coast, have hitherto been obliged to depend largely upon luck for locating the migrating herds. Now they look for them with planes, and on a recent occasion they were thus enabled to bag great numbers of the animals through discovery of their presence on ice-floes hundreds of miles from land.

Similarly, the United States fisheries bureau is making a business of

to photograph the area in which, somewhere, the weapon was surely located. By this means were disclosed the tracks of a truck which brought the ammunition at night, the tracks leading to a place in the forest where the leaves of the trees were withered—evidently by heat from the gun.

Thus it became known where the gun was. But the weapon was operated from a distance by a buried wire. Further photography showed that a line of recently disturbed earth (presumably hiding the wire) led to a house, and beyond that to a dug-out. When all these things had been ascertained, the house and the dugout were simultaneously blown up with bombs.

Similarly, the United States fisheries bureau is making a business of

Science Perfumes Boudoir For My Lady

TODAY the air of my lady's boudoir must be scented, and one of the newest devices for the purpose is a translucent art object—it may represent a mermaid—inside of which is a tiny electric lamp. The light shines in a subdued glow through the object, and the heat of the lamp encourages a slow evaporation of perfume in a saucer surrounding it.

There are special preparations to absorb disagreeable odors, one of which takes the form of a briquet of porous material, hung on the wall in a little wire cage. One of these, placed in the kitchen, will render the atmosphere of a house odorless when cabbage is cooking.

Not long ago in Philadelphia a man and his wife were greatly annoyed by a horrible smell. But, mysteriously enough, it was not continuous; it came and it went at intervals. Observation at length disclosed the fact that the odor was present only on Friday of each week; and this led to the discovery that it was in reality attributable to the cooking of sauerkraut in the next-door apartment. The people next door had sauerkraut for dinner every Friday.

The explanation did not make the smell more endurable, and the man and his wife decided that they would have to move. A friend, just in time, recommended an odor-absorbent, by the use of which they were made happy; the "dead rat" no longer offending their nostrils.

The Navy department, by the way, has recently bought large quantities of odor-absorbent briquets for use on our warships to remove the unpleasant smell of bilge water.

There are special preparations to absorb disagreeable odors, one of which takes the form of a briquet of porous material, hung on the wall in a little wire cage. One of these, placed in the kitchen, will render the atmosphere of a house odorless when cabbage is cooking.

Not long ago in Philadelphia a man and his wife were greatly annoyed by a horrible smell. But, mysteriously enough, it was not continuous; it came and it went at intervals. Observation at length disclosed the fact that the odor was present only on Friday of each week; and this led to the discovery that it was in reality attributable to the cooking of sauerkraut in the next-door apartment. The people next door had sauerkraut for dinner every Friday.

The explanation did not make the smell more endurable, and the man and his wife decided that they would have to move. A friend, just in time, recommended an odor-absorbent, by the use of which they were made happy; the "dead rat" no longer offending their nostrils.

The Navy department, by the way, has recently bought large quantities of odor-absorbent briquets for use on our warships to remove the unpleasant smell of bilge water.

The explanation did not make the smell more endurable, and the man and his wife decided that they would have to move. A friend, just in time, recommended an odor-absorbent, by the use of which they were made happy; the "dead rat" no longer offending their nostrils.

The Navy department, by the way, has recently bought large quantities of odor-absorbent briquets for use on our warships to remove the unpleasant smell of bilge water.

The explanation did not make the smell more endurable, and the man and his wife decided that they would have to move. A friend, just in time, recommended an odor-absorbent, by the use of which they were made happy; the "dead rat" no longer offending their nostrils.

The Navy department, by the way, has recently bought large quantities of odor-absorbent briquets for use on our warships to remove the unpleasant smell of bilge water.

Vegetable Ivory

ALL THE world nowadays is fastening its clothes with buttons of vegetable ivory, derived from "ivory nuts," which are the seeds of a species of palm that grows wild over vast regions in the tropical latitudes of South America.

The tree bears pods the size of a man's head, each of which contains from six to nine egg-shaped nuts, of the size of walnuts. When the pods are ripe, the nuts drop out and are picked up from the ground.

Ecuador and Colombia export immense quantities of these nuts, which are gathered by the natives and brought down the rivers to the coast in canoes. When dried their interior sustains a kernel resembling ivory, being white, fine-grained and extremely hard. It takes a high polish and may be dyed in any color.

Ivory nuts are mostly utilized for making buttons, but they are also used in the manufacture of poker chips, umbrella handles, drawer knobs and a great variety of fancy articles.

ALL THE world nowadays is fastening its clothes with buttons of vegetable ivory, derived from "ivory nuts," which are the seeds of a species of palm that grows wild over vast regions in the tropical latitudes of South America.

The tree bears pods the size of a man's head, each of which contains from six to nine egg-shaped nuts, of the size of walnuts. When the pods are ripe, the nuts drop out and are picked up from the ground.

Ecuador and Colombia export immense quantities of these nuts, which are gathered by the natives and brought down the rivers to the coast in canoes. When dried their interior sustains a kernel resembling ivory, being white, fine-grained and extremely hard. It takes a high polish and may be dyed in any color.

Ivory nuts are mostly utilized for making buttons, but they are also used in the manufacture of poker chips, umbrella handles, drawer knobs and a great variety of fancy articles.

Monkey Chooses Park Squirrel as Playmate

San Francisco, Nov. 19.—The monkey at the children's playgrounds in Golden Gate park, Charlotte, has been unsexed, pal.

Charlotte's new friend is a brown squirrel, the type that runs wild about the park and eats nuts and crackers from the visitors.

The squirrel being curious, entered Charlotte's cage through a hole in the wire netting. Charlotte immediately closed up the hole by twisting the wire into place.

The two strange pals seem perfectly contented and snuggle up close to each other on cold nights and during the day share their food.

Charlotte has been lonely for a long time. She refused to take kindly to Superintendent Taylor's efforts to give her a mate. A honey bear was placed in her cage. Charlotte kept him awake all the time by pulling his ears. She tormented a puppy until the dog was removed.

But peaceful days have now descended upon Charlotte's domicile.

San Francisco, Nov. 19.—The monkey at the children's playgrounds in Golden Gate park, Charlotte, has been unsexed, pal.

Charlotte's new friend is a brown squirrel, the type that runs wild about the park and eats nuts and crackers from the visitors.

The squirrel being curious, entered Charlotte's cage through a hole in the wire netting. Charlotte immediately closed up the hole by twisting the wire into place.

The two strange pals seem perfectly contented and snuggle up close to each other on cold nights and during the day share their food.

Charlotte has been lonely for a long time. She refused to take kindly to Superintendent Taylor's efforts to give her a mate. A honey bear was placed in her cage. Charlotte kept him awake all the time by pulling his ears. She tormented a puppy until the dog was removed.

But peaceful days have now descended upon Charlotte's domicile.

The Rule of Three

(Continued From Page Three.)

turned. "That's what's been bothering me. Mary won't budge any more than Elizabeth will. The only one of 'em that's willing to consider it at all is Ruth."

"Willing to consider it?" cried his wife, amazed. "As if it wouldn't be the most wonderful thing that could happen to any one! To move to Chicago, and see all those great houses along the lake, and go to all those theaters, and concerts, and—, ceased for lack of breath. Then, her eyes flashing:

"John, what's the matter with our girls?"

"The matter is that they're a bunch of molluses," he returned bitterly. "They're satisfied."

"And you're not," she returned quickly. "That's the difference. Why don't you go yourself?"

"Do you really mean that?" he demanded.

"I should rather think I did mean it," she returned. "Why, it's the chance of a lifetime! If you don't see it, you're blind."

"I do see it," he cried. "I have seen it all along. It's only the thought of you that's been holding me back. I've been waiting all my life for the opportunity to get out of here, but I thought it had come too late."

"It's never too late," she retorted, her look full of fire, "unless you're dead."

"Janet!" he exclaimed in unfeigned admiration. "What a wonderful woman you are!"

"Pooh! she retorted. "I'm not sacrificing anything. I'm just as 'risky as you are to get away."

He caught her around the waist and they executed a few dance steps up and down the room.

Releasing her, he asked suddenly: "What'll the girls say?"

"They can say what they please," she said.

At this crucial moment they heard footsteps and voices outside.

"There they are now!" exclaimed Mrs. Farnam. "Wouldn't you know it? Come to say good-night, I suppose."

"Speak of angels—" muttered her husband with unblushing banality.

He walked to the door and opened it.

"Back again?" he inquired blandly. "Well, well—come right in, all of you. Your mother has something to say."

"To us?" asked Elizabeth, puzzled. "Why we've just left her! What on earth can it be?"

Her mother's face was sparkling, her eyes were shining, the lamp light was playing upon her hair.

"Tell us your good news," urged Ruth.

"I'm going away," said Mrs. Farnam, eagerly. "We're moving to Chicago to open the new branch."

She could not have created more of a sensation if she had said Timbuctoo. They were thunderstruck.

Mary was the first to recover herself somewhat.

"It's out of the question," she declared. Then, piling one tautologized statement upon another in her excitement: "It's impossible. It can't be done."

"Why not?" her mother challenged her. "What's to prevent?"

"Any one of a thousand things!" Ruth cried. "In the first place, you'd have to leave your children behind."

"That's the best part of it," interposed her father, tartly, and the pith of this remark was accentuated by titters from behind three cigars. All the girls flushed resentfully.

"We didn't come here to be insulted," they declared.

"Don't pay any attention to him," soothed their mother. "You know I

wouldn't leave you if you were little, even for one night. You forget that you're not children any more."

"We need you just as much," declared Mary.

"Not quite," her mother said, thoughtfully.

"But what about your grandchildren?" urged Ruth. "They're little, aren't they?"

"That's different," her mother answered. "They have their own parents. I have no real responsibility toward them."

"There's your church," Mary reminded her. "You've always been so active in church work."

"There are churches in Chicago, too," replied her-mother, mildly, "so I've heard."

"I can't imagine you," declared Elizabeth, "in any other home than this. To think of your deserting it when we were all born here, and all married from here, and—"

"You didn't stay when something better offered," interrupted Mrs. Farnam. "Why should I?"

"What better could offer," her daughter demanded, dramatically, "than to die where you've lived for so many years?"

"I'm not ready to die yet," retorted Mrs. Farnam.

"Not by a long shot," added her husband, with a dangerous glint in his eye.

"This is between ourselves and mother, father," Elizabeth objected.

At this he detached himself from the group and, stepping forward, said authoritatively:

"Not from now on. Here's where I come in. I've got something to say."

As all eyes turned upon him no one failed to be impressed by the earnestness of his tone. Standing in the midst of his family, he towered head and shoulders above them all. His bearing, his vitality, and his height all contributed to make him an impressive and dignified old man whose words carried weight.

"Before you begin to talk about your mother's dying," he said, sweeping his three daughters with an inclusive and scornful glance, "you'd better give her a chance to live. She hasn't had that yet, you know, even if she is nearly sixty years old. In my opinion, it's high time she did."

All three of the Farnam girls had paled at his implication. Ruth started to speak, but her father prevented her by a lift of his hand.

"Don't interrupt me," he continued. "It won't be my fault if you don't understand me clearly by the time I'm through. Ever since you were old enough to have any say at all, you've been cramping your mother's style. She was just a mother to you—not a human being. You never saw her in any social relations; you've kept her so surrounded with yourselves that she never could make any friends. You've talked a lot about doing your duty, but half of your attention to your mother came from a desire to be pointed out as model daughters in the town. People fell for it, I admit; they didn't see in detail what that attention consisted in; how you dictated to her what she should do, and read, and wear; how you bored her to distraction, how shamelessly you intruded on our married life, robbing us of our time (a valuable commodity at our age) and of our privacy. It's appalling to think of those intolerable, wasted evenings of the reading we might have done,

the companionship we might have enjoyed!

"You always said you didn't want to neglect us—you never realized that we'd have given our eye-teeth to do it!—and we'd have gone on standing it if you hadn't begun to talk about where your mother ought to die. That was a little too much. Supposing she were to give in to you and stay here. Instead of dying in her bed she might be knocked down by a trolley car tomorrow and draw her last breath in the drug store up the street. You won't understand that it isn't where you die that matters, nor even where you live, but how you live and whether you live at all."

Ruth had begun to cry.

"I'm beginning to understand," she sobbed.

"I am, too," admitted Elizabeth, "so am I. Thank you, father," said Mary.

Their father's glance softened. There was something in these girls after all.

"If you'll only stay," promised Ruth, "everything will be altogether different from now on."

Their mother stretched out her arms to them, just as she had when they were little girls.

"You be the one to tell us what to do about everything," Mary suggested humbly, in mid-embrace, "after this."

A look of frightened protest appeared upon their mother's face. Releasing them, she answered:

"Then I'd be doing the very thing I'm finding fault with in you. No, girls, 'Live and let live,' you know. I'd really better go."

"Of course she's going," their father interposed in a matter of fact manner. "There's never been any question about that."

Elizabeth sat down heavily.

"But what will you do in Chicago, mother," she demanded, "all day long when father's away?"

Her mother's face glowed with anticipation.

"O, I'll find plenty to do," she said. "There'll be concerts and lectures, and we may make some acquaintances in a business way, and, when nothing better offers, why, I might even go to the movies once in a while!"

(Copyright, 1921, by Ethel Train.)

Twenty-Four Lessons in Piano Playing--Second Lesson: B Minor

This is the second of a series of 24 practical lessons in piano playing, prepared by W. Scott Grove. The lessons will give you a thorough course of instruction, beginning with fundamentals and showing you, in turn, all the phases of piano playing. One lesson will be published each Sunday. These carefully prepared lessons furnish you an easy, practical, inexpensive way of acquiring piano instruction. You will find it interesting to follow them and by the fifth or sixth Sunday will be surprised at your progress.

GROVE'S MUSIC SIMPLIFIED.
(Copyright, 1920, by W. Scott Grove, Scranton, Pa.)

Lesson No. 2
Having perfected yourself in Lesson No. 1 of this course of 24 lessons, the second lesson of the series is herewith presented. It is similar in form and theory to the first lesson, but embodies another set of keys on the instrument, thus guiding the beginner, step by step, in his or her

effort to master the piano or organ. This system of teaching embraces a general and practical method of instruction. It teaches the notes and letters in the transpositions of the different keys and embodies the principle of harmony and thorough-basis. Learn each lesson thoroughly before taking up the study of the next.

INSTRUCTION—Place chart upon the keyboard of piano or organ so that the small white letter D with a dash above it at the bottom of the chart is directly over the key D on the keyboard. The white and black spaces will then

correspond to the white and black keys. Each of the three horizontal series of letters represents a chord. Beginning with the upper row, play the white letter with the left hand, and play the three black letters with the right hand, making the first chord. Then, in the same way, play the notes indicated in the second horizontal series, then those in the third and back to the first, forming a complement of chords in B Minor, which is the relative minor key of D Major, having the same signatures, two sharps.

The first things necessary in becoming a good player are patience and practice. Before the

next lesson the chords shown should be played over and over again until you memorize them and can play them without the chart. Memorize the letters also. You will soon find you will be able to play simple accompaniments in this key to any melodies you or your friends may sing.

If you wish to go further in studying, learn the fingering of the scales shown on the staff in each chart, upper notes played with right hand, lower with left hand. The chords at the end of the staff you will find are the chords you already have learned, but with the upper notes

inverted. They can be rearranged in still another way: try to find this way, but remember that the notes in the bass always remain the same.

Every triad in black letter is marked 1, 2, 3. Always read it so, no matter in what vertical order the notes may be written. Note that the small letter D with a dash above it must not be played.

Never play small white letter D with dash above it.

NEXT LESSON—Key of G.

Key of B Minor relative of D Major:

B	F#m	G	A	B	C#m	D
E	F	G	A	B	C	D
F#	G	A	B	C	D	E
D	E	F	G	A	B	C

"Back again?" he inquired blandly. "Well, well—come right in, all of you. Your mother has something to say."

"To us?" asked Elizabeth, puzzled. "Why we've just left her! What on earth can it be?"

Her mother's face was sparkling, her eyes were shining, the lamp light was playing upon her hair.

"Tell us your good news," urged Ruth.