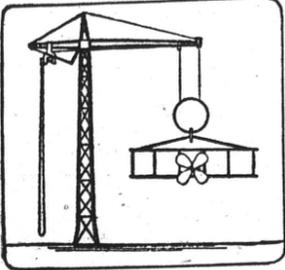


SCIENCE and INVENTION

STARTER FOR AN AEROPLANE

Overhead Carrier Also Assists Aviators in Landing—Tower of Steel Rises High Above Ground.

Aviation is far advanced indeed when people begin to invent towers to start the airships from. A New York man has designed such an apparatus, and it is described here. Aviators agree that there is not much trouble in keeping an aeroplane going once it is started. The difficulty lies in getting a good start and making a safe landing. That is what the tower is for. It is of steel, of course, and rises high



Aeroplane Starter.

above the ground. Extending horizontally from the top is an arm from which a large steel ring depends on cables that yield to a certain extent when the machine alights to prevent a jolt. To use this apparatus the airship must be equipped with a catching device on the top to engage the ring. In this way it can be lifted from the ground and swung clear till the engines get started. Then, released from the ring, it will fall off into space with nothing to obstruct it. In making a landing the aviator sails his aeroplane close to the ring and "hooks on" to it. If he misses it the first time he can easily try again as there will be no harm done.

SAMPLE THE OCEAN'S DEPTH

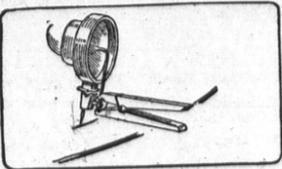
Bottle for Securing Specimens of Water for Analysis From Selected Depths Is of Metal.

The water bottle for getting water for analysis from selected depths in the ocean is a cylinder of brass, German silver, or other metal which resists the corrosion of sea water, generally about two inches in diameter and 12 or 14 inches long, with upward-opening valves at the top and bottom, connected together on a central stem. Lugs are cast on the side of the cylinder for conveniently securing it at any point along the length of the line by which it is to be lowered into the sea. During the lowering of the line the valves of the bottle are kept unseated by the passage of the water through the cylinder during the descent; but, when the motion is reversed, the valves seat themselves and are locked by the descent of a small propeller in the framework above the upper valve, which rides idly on a sleeve during the lowering of the bottle, but descends along a screw thread to press the valves upon their seats when the line commences to be hauled up. A specimen of the water at the depth is thus brought to the surface confined within the bottle, and a series of specimens from different depths may be obtained at one haul by securing a series of water bottles at the required intervals along the sounding line.

SOFTENS TONE OF MACHINE

Ordinary Clothespin Clamped on Head of Setscrew Makes Effective Mute—Eliminates Scratching.

An effective mute, for use on any disk talking machine, can be made by clamping an ordinary wood clothespin on the head of the setscrew that holds the needle. Thus the tone will be softened a great deal more than by the use of a wood needle, writes C. M.



Mute for Talking Machine.

Reeves of Los Angeles, Cal., in the Popular Mechanics. The record of a stringed instrument, such as a violin, will be almost exactly reproduced. It will also eliminate almost all the scratching sound caused by a steel needle.

Use of Ultra-Violet Rays.

According to experts of the United States department of agriculture, the use of ultra-violet rays for sterilizing milk, as advocated in Europe, does not destroy all bacteria and adds a disagreeable flavor to the milk.

Dangerous Hair Tonic.

The Paris Board of Health has forbidden the sale and use of hair lotions containing tetrachloride of carbon as dangerous to the heart, head and stomach.

AIRSHIPS ARE HERE TO STAY

Major Driant, Expert in Questions of Military Engineering, Has Faith in Dirigibles.

The French military authorities, in spite of the Zeppelin disaster, are still convinced that the big German dirigible dreadnoughts are a most destructive factor in warfare. Major Driant, deputy for Nancy, a son-in-law of the late General Boulanger and one of the foremost experts in questions of military engineering, in a recent interview said, according to the New York Tribune:

"The Zeppelin catastrophe does not shake one iota of my faith in big dirigibles. It is true that the Germans have had many accidents, and in time of war they will have many more, but as an offset we must remember the enormous service these dirigibles are capable of rendering in actual warfare. "For instance, a dirigible can carry eight tons of dynamite, and can drop it, or any portion of it, at whatever point its commander may select. Suppose war breaks out between Germany and England and one dirigible costing \$300,000 and handled by 20 men gets in a position above a British battleship costing \$12,000,000 or \$15,000,000 and containing a crew of a thousand men. The destruction of the latter would be inevitable, for no deck armor, not even that of the Queen Elizabeth, could resist so great an impact.

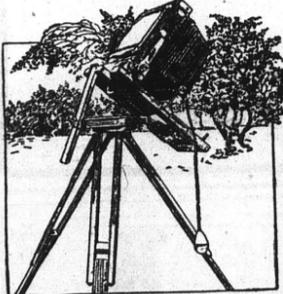
"The best proof of this theory is the confident perseverance of Germans in steadily increasing their fleet of Zeppelins, a perseverance that offers us a most wholesome example.

"I do not underestimate the value of our aeroplane for reconnoitering and scouting, but I have examined at Lunenburg a German Zeppelin from top to bottom and I have no hesitation in saying that the loss of 13 dreadnoughts of the air is not by any means too great a sacrifice for the supreme and inestimable destructive values of German Zeppelins as engines of annihilation. That can be appreciated only when the next war breaks out."

TILTING BASE FOR CAMERAS

Important Factor in Taking Pictures of Small Objects on Ground Is Invented by Californian.

For taking pictures of plants and other small objects on the ground, a tilting base for the camera is essential, says the Popular Electricity. The one shown in the illustration was made by a California photographer from three



Tilting Camera Base.

pieces of inch board. One piece is attached to the tripod in the same way that the camera is ordinarily. To this is hinged another piece on which the camera is fastened by a thumb screw. The upper piece is tilted by use of the third board which is cut to two inches wide. It is hinged to the top piece and regulated by thumb screws attached to the bed piece.

NOTES OF SCIENCE AND INVENTION

American vapor gas street lamps are being tried in Jerusalem.

In Russia no photographer may practice his art without a license.

Cleveland has a motion-picture theater which runs two films simultaneously.

A patent has been issued for a pencil holding clip to be fastened to a person's ear.

It is said that documents and newspapers may be preserved indefinitely in a vacuum.

Apparatus has been invented by a Russian musician to strengthen the muscles of the hands of violinists.

The always mysterious Dead Sea in Palestine is providing a new puzzle for scientists, as it seems to be drying up.

For parcel post purposes there has been invented a bag sewed to the bottom of which is a flat tag for address and stamp.

Columbia university recently tested an aeroplane propeller so arranged that the direction of the thrust could be changed while in motion.

Clips have been invented to form cuff protectors for bookkeepers from blotting paper, which may be used for its customary purpose when so worn.

A chemical laboratory of Glessen university, where Liebig did his epoch-making work a century ago, has been restored as a shrine for scientists.

Making Tomorrow's World

By WALTER WILLIAMS, LL.D.
(Dean of the School of Journalism of the University of Missouri)

INSURING A NATION.



London, England.—"An Act to provide for insurance against Loss of Health and for the Prevention and Cure of Sickness, and for Insurance Against Unemployment"—such is the comprehensive title of the most ambitious measure for social reform yet attempted in Great Britain. It will make over the United Kingdom, declare the Liberals and their allies, who enacted it into law. It will ruin the nation, assert in public the Conservatives, who opposed its enactment. In private all parties appear committed to acceptance of the general principles of the National Insurance Act, as it is popularly called, though as to some of its practical workings there is fierce contention. It does not appear probable that the act will doubtless—quote Bonar Law, the Conservative leader—be "drastically amended," if his party, turning out the Liberals, is placed in power at the next general election.

The insurance act became a law December 16, 1911. It was a government measure presented and supported by the Liberal government. "Such a scheme," said Worthington Evans, M. P., one of its most vigorous critics, "could never have been brought in except by one with the pluck of Mr. Lloyd-George, and with the help of those connected with insurance." In many respects the original measure was crudely drawn, showing the marks of haste in its preparation. Some of the crudities have been corrected by supplementary legislation.

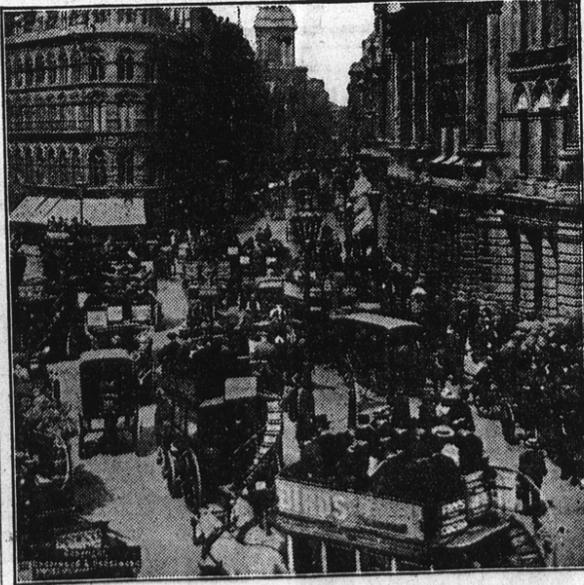
Compulsory insurance against Sickness. What is the purpose of the insurance act and what are its practical workings since it has been British law? While the act was passed in December, 1911, the insurance features

a week are insured without cost to them. Contributions are not paid by the workman during sickness or unemployment and cease entirely when he reaches the age of seventy years. The act makes it illegal for the employer to deduct his own proper contribution from the worker's wage; he must deduct only the worker's share. A special provision modifies contributions in cases where employers maintain their workpeople in sickness. Men and women of all ages up to sixty-five years are treated alike in respect to contributions. Insurance cost is no more at forty years of age than at sixteen. The age handicap, necessarily imposed by private insurance companies, is entirely absent from the British scheme.

What are the benefits? The member of parliament from Northampton, H. B. Lees Smith, and the managing director of a great wholesale establishment of London, Wilkie Calvert (brother of Dr. Sidney Calvert, professor of chemistry at the University of Missouri), summarized these benefits:

Sickness and Other Benefits.

The workman pays eight cents a week or less. His benefits are the same whatever he pays. These benefits include free medical attendance and free medicine, sickness benefit, disablement or invalidity pension, maternity benefit, sanitarium benefit. Free medical attendance and free medicine are provided to the worker who becomes ill. This provision has been sharply attacked by the British doctors. The sickness benefit varies in amount. Ordinarily it is \$2.50 a week for men and \$1.75 a week for women for 26 weeks. Sickness benefits cease at seventy years of age, when the old age pension becomes payable. If sickness continues longer than 26 weeks, \$1.25 a week is paid during the remainder of the sickness, however long it may be. Provision is made for certain reduction in benefits when members are in arrears with their contributions, but no one is suspended from medical, sanitarium and maternity benefits until more than 26 weeks in arrears. Insured women, married or unmarried, and the wives of insured men, whether insured or not, receive a maternity benefit of \$7.50 in addition to sickness benefit.



Cheapside, London.

became effective only in July, 1912. Under the act, every employed person from sixteen to seventy years of age, whose income does not exceed \$800 a year, is compulsorily insured against sickness, in whatever manual or other occupation engaged, with certain rather unimportant exceptions. Those earning more than \$800 a year by manual labor alone are also compulsorily insured. In a British population of 45,000,000, the act includes, approximately, 14,000,000 in its provisions. The act also provides that other persons, not included in the compulsorily insured class, may join under certain conditions.

"18 Cents' Worth for 8 Cents."

The insurance fund is derived from three sources, the worker, the employer, the national treasury. Here arises one of the strongest criticisms of the act, both employer and workman claiming his contribution to be too large. The weekly subscription of the workman earning more than \$3.75 a week is 18 cents, of which the workman pays eight cents, the employer six cents and the national treasury four cents or its equivalent. In addition, the state pays the cost of central administration and large grants towards hospitals and medical benefits. When a workman's wages are less than \$3.75 a week, he pays a less proportion to the insurance fund and the employer pays more. Insured women pay one-fourth less than insured men. The workman thus buys 18 cents' worth of insurance for eight cents. Those whose wages are less than \$1.75

and relief from payment of contributions. It is estimated that when the scheme is fully at work a million mothers in Great Britain will each year receive this benefit at a cost to the nation, on this account alone, of \$7,500,000. Under the sanitarium benefit the state provides for free treatment and care, in sanatoriums or at home, of persons who contract tuberculosis. The insurance commissioners may schedule other diseases also for institutional treatment. These are the minimum benefits. Other benefits, possible with prudent management of the insurance funds, include larger old age pensions and higher sick, disablement and maternity pay and convalescence allowances. Administered Through Fraternal Societies.

The administration of the act is through the government, which utilizes the friendly societies, trades unions and other approved organizations—and through the postal savings bank for deposit contributors whose friendly societies would insure. The friendly societies correspond, to a degree, to mutual insurance companies in the United States. The insured thus control the working of the scheme. The act makes safe and solvent the fraternal or friendly society and increases its benefits, provided upon repeated examination the society or lodge shows approvable management.

But how does the insurance act benefit the employer? What does he receive in return for his contribution of six cents a week?

"Anything which keeps the worker in good health and good heart," said Mr. Smith, "which relieves him from the necessity of working when he is physically unfit to work and frees him in the case of illness from worry as to the future, must increase the efficiency of labor. In no way can this be done so cheaply as by a scientific system of insurance such as the act provides. The increased efficiency of the worker will be far in excess of the total cost of insurance under the scheme. As employers pay only a small part of the cost, it may be anticipated that they will in the long run receive benefits far out-weighting their contributions.

Relieves Undeserved Poverty.

"In judging the act," continued Mr. Smith, "you must not consider it as a final measure. It is only a start—though a good start—in the campaign for establishing a minimum standard of living and comfort below which no Briton shall fall, unless it be through deliberate fault of his own. To properly judge this act you must regard it as part only of a wider program for dealing with the preventable causes of poverty and unemployment and raising the standard of living for the working classes in this country. Poverty and unemployment have existed and still exist in every country and under every form of government. Like disease and death, they cannot be wholly banished by act of parliament. The insurance act strikes at certain causes of poverty and unemployment which are preventable. In conjunction with the workmen's compensation acts, the old age pensions act, the public health acts, and the factory acts, all measures of social reform, which seek to make tomorrow's world better than our world today, the insurance act endeavors to remove poverty and distress due to accident, sickness, infirmity, old age, insanitary workshops and unhealthy dwellings. It attacks the slum owner, penalizes the sweeter and makes the health of the people the first care of the state. It lays broad and firm the foundations of a new social policy—a policy of mutual help and good will among all members of the community, based upon a recognition of the fact that the undeserved poverty or undeserved unemployment of the humblest member of society is something which closely affects the general well-being of the state."

And Mr. Calvert, who represents not a Liberal-Labor constituency, but the city which employs labor, gave emphatic assent.

270,000 Get Sick Benefit Weekly.

Some things are certain in regard to the act's workings. About 15,000,000 persons in Great Britain and Ireland are now insured against sickness, when before the act there were about 6,000,000. The act raised the first year \$130,000,000. Of this amount the workmen contributed \$55,000,000, twenty thousand doctors are employed to give free medical treatment and nine thousand chemists—who are the British druggists—furnish free drugs, prescribed by these doctors. To the poorest workingman is given the same medical treatment and the same pure medicines and drugs as the richest duke can afford. About \$25,000,000 has been paid during the year to doctors and \$5,000,000 to chemists. Sickness benefits are paid weekly to 270,000 workers. The men get \$2.50 a week and the women \$1.75 a week, because they pay less.

Maternity benefits amounting to \$2,500,000 have been paid.

The birth rate has at least not been discouraged. For tuberculosis sanatoriums has been set aside \$8,000,000. Twenty-five thousand workmen have been treated under the act, 13,000 in sanatoriums. These are the figures, but for the real facts as to the benefits brought by the act one must note the changed conditions in the workingmen's homes, see the cures wrought, the shadows lifted. No man or woman in the United Kingdom need lack, under this act, insurance against sickness, unemployment or the unmerited poverty which, to the underpaid, so frequently comes with old age.

But is this not queer business for a great empire?

Let the best-hated and best-loved statesman in Great Britain, the author of the national insurance act, David Lloyd-George, make reply:

"Adds New Glory to Empire."

"Since 1908, when we had old age pensions for the first time, we have had a great empire for the first time taking a direct interest in the condition of those aged, those infirm, those sick, and those broken. The old theory was that this was beneath the dignity of an empire. The concern of an empire was to see that the machinery of human slaughter was perfect. That was the concern of an empire. To tax the food of the people, that is thinking imperially; but to heal the sick, to feed the hungry, these are thoughts fit only for a parish beadle. There was a great emperor once who added to the luster of his fame by visiting the wounded after the battle. Now we have got this great British empire for the first time walking the hospitals, visiting the sick, inquiring how the infirm are getting on, helping them to mend and curing and assisting them. You ask me if this is not queer business for a great empire. Why, it is adding a new dignity and glory to the British empire. It is the beginning of a new era in the history of imperialism, the newest imperialism and the best."

In a certain old Book it may be read:

"For I was an hungry, and ye gave me meat; I was thirsty, and ye gave me drink; I was a stranger, and ye took me in; naked, and ye clothed me; I was sick, and ye visited me; I was in prison, and ye came unto me."

And of the Great Exemplar of this high duty of man to man it is recorded that his empire shall have no end. (Copyright, 1913, by Joseph B. Bowles.)

WIT and HUMOR



FIND PLEASURE WITH MONEY

Being Too Busy in Hoarding Up Wealth, Americans Spend a Large Portion of It on Politicians.

The objects of pleasure are two in number. First, to kill time, and, second, to keep us from doing something else which would make us more miserable. The pleasures of the American people, roughly speaking, are likewise twofold; namely, making money and spending it. Some people derive all their pleasure from making money, and others all their pleasure from spending it. Others combine the two. Being an inventive people, the Americans have created many ways of spending money. Being too busy making it, to spend any time on the drudgery of running their country they spend a large portion of it in supporting the politicians. This, indeed, is one of their chief pleasures. And their superb sense of humor enables them to enjoy intensely the accounts of what all the politicians are doing, which enterprising papers publish from day to day.

The Americans have other pleasures, but compared with this one they are mostly trivial.—Life.

A Mild Diversion.

"My wife is treasurer at our house and it's difficult for me to hold out any money. However, she sometimes trusts me with a dollar bill and I contrive to hold out the change."

"Doesn't she remember to ask you for it?"

"Not always. I relate some little diversion to occupy her mind and distract her attention."

"How do you manage it?"

"Last time I told her that her father had set fire to the house."

A Heedless Husband.

"They say that marriage is a community of interests, but my husband has no consideration for me. Yesterday he lugged a total stranger home for dinner. Not a word of warning. Is that any way to treat a wife?"

"Oh, that wasn't so reprehensible. You could easily rustle up something for dinner."

"But there wasn't a thing in the house. I had lost the market money at bridge."

A Careful Couple.

"Well, here you are in your cozy bride's nest. The flat looks fine."

"Yes; we buy a little something every week."

"And have you ordered a piano yet?"

"No; we haven't ordered a piano. We thought we wouldn't buy anything as expensive as that until we found out if the marriage is going to be permanent."

SAVING UP.



Stenographer—The bookkeeper, I think, is going to get married!

Invoice Clerk—How do you know?

Stenographer—He walks to work, smokes a pipe and eats ten-cent lunches.

Good Enough for Dad.

"Madam, we had to amputate. Your husband will now require an artificial limb. A good one will cost several hundred dollars."

"It's simply a case of a wooden leg, isn't it, doc?"

"Well, madam, you might so specify it."

"Dad ain't used to much. I'll just saw a leg from an old table we have in the garret."

Played Out.

She—My dear, I haven't got a decent rag to put on.

He—You needn't try that old rag-time tune with me.

Her Little Joke.

He (on piazza)—The hum of these darned mosquitoes is getting monotonous.

She—It is; they bore me dreadfully.