

# Keeping Up With Science

By Science Service  
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## Steam Power Now Competes With Diesel

### New Boiler Designed for Use on Warships

NEW YORK.—A new type boiler which may bring a new era into the generation of power aboard warships, especially those of the destroyer class and perhaps submarines, is described in Mechanical Engineering, published here by the American Society of Mechanical Engineers. So efficient is the device that it makes steam a competitor of the Diesel engine.

The ultra-modern boiler is highly compact, light in weight, and can be easily adapted to the narrow hulls of destroyers, according to Adolphe Meyer of Brown, Boveri & Co., Baden, Switzerland, in his report to the society. The boiler is already coming into use throughout Europe. Because the fuel gases travel faster than sound in some parts of the boiler, it is called "Velox," coined from the word velocity. The weight of the Velox steam generator is only one-fifth that of the ordinary oil-fired water tube boiler, while it occupies only one-half as much space as even the most modern marine boilers.

**Any Oil Used.**  
"In submarines," says Mr. Meyer, "the small muzzes, the possibility of rapid cooling by running cold air through the boiler, and the small dimensions of the exhaust pipes enable the time required to prepare for submerging to be reduced to an extent hitherto only to be obtained with Diesel engines."

"In comparison with the Diesel engine," adds Mr. Meyer, "the Velox steam generator has the advantage that every kind of oil can be used and there is no restriction as to the use of the more expensive gas and Diesel oil."

In warships, the Swiss engineer explains, the full steam output is ordinarily obtained by forcing the boilers to about three or four times the amount which such a boiler would normally give if used for other purposes. An efficiency of 75 per cent or less is obtained under such forced conditions. By comparison, the Velox boiler has an efficiency of between 88 and 90 per cent.

**Quiet About Battleships.**  
An additional naval advantage is that the exhaust gas from the boiler is completely invisible even at maximum output.

"For obvious reasons," Mr. Meyer states, "no information about Velox plants in warships is available except the fact published in British papers, that one unit is built for the British navy by Yarrow and Richardson Westgarth, the former building the boiler proper, the latter the gas turbo-blower and other auxiliaries."

Velox boilers are already being used in various countries throughout Europe in iron and steel works, central heating plants, and steam electric generator stations.

Special advantages of the new type boiler are:

1. It can be brought up from a cold condition to its full load steam generating capacity in from 4 to 5 minutes.
2. Changes in load can be handled quickly. A drop of 50 per cent in the load can be dealt with by the automatic control device in but 20 seconds. Even when the full load is cut off suddenly, the boiler will not blow off.

As in warships, the best features of the Velox type boiler—small space requirements, light weight and high efficiency—exactly fit the needs of railroad locomotives.

The small amount of space needed for the new boiler means, Mr. Meyer points out, that in locomotives adequate room can be left over for the driving and attendance. Moreover, it is possible to substitute a Velox generator on the chassis of an existing locomotive without altering the driving mechanism.

Orders have just been placed for the transformation of an existing locomotive to 2,400 horse power and 100 miles an hour speed.

## Find Heavy Water Slows Plant Growth

New York.—Heavy water, in which the recently discovered double-weight hydrogen atoms replace the commoner single-weight ones, slows down the rate at which green plant cells can form food substances. Drs. James Curry and Sam F. Trelease of Columbia university have discovered.

They used cultures of the simple one-celled water plant known as Chlorella. Equal measured quantities of these cells were put into ordinary water and nearly pure heavy water, and their respective food-making efficiencies tested by measuring the amounts of oxygen given off as a by-product of the process. The results show that the cells in heavy water were only two-fifths as active as those in the plant's normal medium of ordinary water.

## Gas Prices Will Go Up and Stay in a Few Years

Science Sees Definite Danger to Country

GASOLINE prices are going up in a few years. And when they go up they will stay up.

When that happens, it will be only the symptom of a very serious underlying situation, which will carry with it real danger to the United States, from both the economic and the military sides. The American Chemical society made public a warning to this effect on the eve of its national meeting at San Francisco.

Difficult industrial adjustments involving investments totaling billions, a radical shift in auto styles toward light, cheap cars, and new and onerous duties for the navy in protecting trade routes to the foreign oil fields on which we shall have to depend when our own petroleum supply runs low, are among the unpleasant realities we shall have to face less than half a generation hence, the warning stated.

On the naval side, the report said: "Increasing petroleum imports will result in greater dependence upon our navy and air force to prevent the serious dislocation of industry which result if such imports were to be interrupted. The manufacture of substitutes, such as shale oil or oil made by the hydrogenation of coal, could not possibly be developed quickly enough to be of importance in a national emergency such as war, which would be settled one way or another long before any large part of our gasoline demand could be supplied from the auxiliary sources."

"The amount of our reserves is fairly accurately known and is believed to be ten to twelve billions of barrels," the report continued. "Although this would be equivalent to about twelve or fourteen years' supply, producing fields rapidly decline but continue to produce small amounts of oil by pumping for many years. Shortage will accordingly be experienced many years before exhaustion."

"The magnitude of the oil reserves in foreign fields is not known as accurately as is our own, but much of our petroleum requirement will, within a few years, come from South America and possibly Russia and Persia."

The authors of the report, Dr. Benjamin T. Brooks, consulting engineer, and L. C. Sluder, geologist of Henry L. Doherty and Company, do not place much reliance on the proposed use of power alcohol to eke out the gasoline supply.

## Lady Katydids Are All Soft-Spoken

RALEIGH, N. C.—Katydid, shrilly shouting their interminable arguments over an imaginary Katy's responsibility or lack of it for some unknown deed, are all males. Their noise is really a love-song, intended for the charming of some coy, green-winged damsel of their own kind, hidden among the leaves.

But the female katydid is "not so dumb after all," reports Dr. B. B. Fulton, of North Carolina State college here.

"It has often been supposed that the female was so charmed by the musical efforts of the male that she sought out his leafy abode," he says. "But there is now evidence to show that in some species at least she stays at home and merely sends out a katydid code signal meaning 'here I am if you want me.'"

Doctor Fulton was led to his discovery of the female katydid's ability to speak for herself when the time comes, by hearing very faint responses on the part of unmated females, when males were raising disturbance in the neighborhood. These were tiny hissing sounds, no doubt the katydid equivalents of a shy "yeth, thir."

They must have required extraordinary hearing abilities on the part of the males, Doctor Fulton comments. But they sufficed.

Female katydids make their very faint responses by rubbing special surfaces on their wings together.

## Mouse Gives Evidence That Favors Darwin

WOODS HOLE, MASS.—Darwin's theory of the origin of new hereditary characters through the operation of natural selection receives support from a white-faced mouse shown here by Dr. H. D. Goodale of Williamstown, Mass.

According to the theory originally propounded by Darwin, a new genetic character would "start small," and grow to full expression by the gradual accumulation of tiny variations of the same kind. Later geneticists have tended to discard this idea, holding that natural selection is able only to sort out already existing characters, but that it cannot operate to create new ones.

The character developed by selection, under the observation of Doctor Goodale, started as a minute white spot on the head of a "self-colored" mouse. It slowly grew larger, until now it covers more than half the face. This is the behavior that might be expected on the basis of Darwin's original theory of natural selection.

## Accent Is on Costume Suit for Fall

By CHERIE NICHOLAS



SO MANY women do not think they can wear suits, because, unless one be slim and svelte, a blouse and skirt are apt to prove a problem at the waistline. To such "cheerios" is the message for designers of vision and inventive genius have taken the matter to heart and have come to the rescue of despairing ones. They have surmounted the difficulty via that which they are pleased to title in fashion's vocabulary as the "costume suit." Needless to say the new costume suits carry the promise of a foremost vogue, autumn and winter through, seeing that they are proving as effective as a strict reducing diet in slenderizing the figure.

The idea is to top a slim frock of some one or other of the incomparably handsome wools or wools-and-silk, such as are glorifying the current fabric showings, with a varied length coat to match. The fact that intriguing fur trimmings are playing such an important role in present-day styling adds to the glamor and prestige of these voguish costumes.

In tuning the theme of these slenderizing suit effects to the individuality of the wearer, much depends upon the coat to "turn the trick." The accompanying illustration of a trio of molds recently shown by style creators of the Chicago wholesale market district demonstrate the point better than words can tell.

If your ambition is to arrive at slimmness and height, the costume to the left in the picture will help you make dreams come true. The slightly full-below-the-elbow sleeves, with just the right length to the coat, combined with fitted bodice lines and slender hipline trend to accentuate a slenderized silhouette. The simple zored lines of the skirt also trends to the straight slim look.

The bright metal touch which is so dramatically enhancing the new fash-

ions is present in the double collar and pointed vestee front. The collar is of black lynx as is the banding at the bottom of the coat.

For the tall stately woman or the slim older woman who aspires to added slimmness, an answer to her long lings is given in the smart restaurant costume as pictured in the center of the group. It reflects influence of the Italian renaissance especially in the grandiose royal purple velvet which fashions it. The rich and beautiful reds, purples and greens of early Italian painters are the featured kind this season. Fitted basque with snug little waistline, trimly fitting hips and flaring-below-the-knees skirt are all flattering. The glaringly new details, however, are a youthful peplum flare of the jacket together with full sleeves that are fitted in at the wrist to be very flattering to the hands. The pillow muff which she carries is also significant, for it has been quite some time since this type of muff was in fashion. The fur is a shaded krimmer and its manner of bordering the edges emphasizes a high-style trimming note.

From Russia comes the suggestion for the fitted town suit shown to the right. It registers as very "young" for its flared tunic line a la Russe makes it youthful. It is flattering to either the tall or short slim figure, depending upon the length of the coat. Mahogany rus, a new rich tone not too reddish, is the color of the cloth. Tailored bandings of beige krimmer make this costume suit look all the more Russian. The frock underneath, however, is quite American with its simple tailored lines and amusing pockets and novel wooden buttons.

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## WITH A HOOD

By CHERIE NICHOLAS



Here's a youthful and ultra chic evening wrap. Hoods and head coverings are still going strong in the mode. This one is a red-riding hood type, one that Gladys Swarhout, of opera fame, has selected as part of her wardrobe of evening wraps. It is of brown velvet and is worn over a powder blue silk sheer gown which has skirt fullness and the new tailored top. It would be handsome in black velvet—why not for your party wrap this winter?

## PLEATS DOMINATE STYLES FOR FALL

They've taken a pleat in fashion this fall, and the results are both numerous and startling.

Pleats turn up at the most unexpected places in the new fall frocks, cropping out anywhere from skirt to neckline.

Pleated sleeves are among the newest wrinkles of the mode, these being large and loose in the new manner, drawn in to a cuff at the wrist. They're effective in black chiffon, combined with a black crepe dinner gown.

Pleated blouses, in soft, sheer fabrics, are drawing ecstatic "ah's" and "oh's" from shoppers, who are buying them for wear with the new velvet cocktail suits.

Some of the newest evening gowns are all pleats, from neck to hem, done in soft, silky fabrics that manage to outline the figure in a most seductive manner, keeping their classic lines as well.

## Intriguing Styles in New Handbags for Fall Season

Bags are shown this season in new and intriguing leathers and combinations, such as frogback antelope (a pebbled suede), puffed and quilted calf, saddle leather, alligator, pigskin and ostrich, all often combined with patent leather.

Top handles are new and important. Bags are roomy and soft, with fewer rigid frames; square and oblong shapes are the most popular, and there are many new tricks in fasteners and monograms.

The Schiaparelli handbag, fastened with gilt padlock and key, is the top of the miser girl, guaranteed pick-pocket proof. Metal rimmed keyholes also are used, as are metal buttons.

The "mad-money" bag, of suede, has an outside change purse trimmed with a small gold coin on a gilt chain.

## The Rogues' Gallery



With a tax collector stationed at every cocktail party this source alone should bring the treasury ample funds with which to finance all of the President's appropriations.

## A BOX OF PIN-HEAD TAX

By NINA WILCOX PUTNAM

RIGHT now the government seems to be taxing everything, including our patience.

There once was a day when, if you heard the word "tax," you thought of a small box full of little dent-tasse nails which bit you when you tried to pull one out to mend the window shade.

Now when anyone asks if you have some tacks in the house, you rush for the desk drawer and pull out a handful of final notices.

Of course, these only represent the sort of taxes which come to visit you in the home, and range in size from the big, burly Federal Income Tax Return counterpane, down to the little itty-bitsy two-dollar poll-tax. Just why I should ever receive the latter, I have never understood. Poll-tax indeed, when I've never even priced a parrot, much less kept one.

I pay my dog tax, though. They call it a license, of course, but it's a tax on my pocketbook no matter what they call it. I suppose the tax on shoes is the real dog tax . . . oh well, that one is at least my own, poor thing!

The first fast one the government put over on us in a big way, was that intelligence test, the income tax, and what a crossword puzzle that turned out to be! At first it wasn't so popular, but now the fifteenth of March has become the fixed date for the annual Munchausen contest, and everybody goes at it in a spirit of catch-as-catch-can and rather likes it. They say "it's fun to be fooled" but it's even more fun trying to fool the Collector of Eternal Revenue.

The states, many of them being a lot of old copy-cats, got out a second edition of the above mentioned. The State Income Tax may be a state affair but it is also that in the plural—a state of affairs—and if you don't believe me, just wait until you have to pay yours this year!

The whole country is now like midtown New York at midday: taxis, taxis everywhere and you can't make a move in any direction without running into 'em.

Of course the gas tax is a good thing in a way because it keeps a lot of people in their homes. But it's a shame it don't apply on the floor of the house of representatives.

While as for this sales tax they have got in a few states such as California and New York, well, it's funny how people are. When the government allowed that 2 1/2 per cent beer was legal, the folks kicked because it wasn't strong enough. But a 2 per cent sales tax is so strong they claim it knocks 'em for a headache. Oh well, it takes all kinds of people to make a world and then what have you got?

The beauty who is getting all the attention just now is the inheritance tax. Around where I live, they call it the New Inheritance Tax. Well, I must say that years ago, all I inherited from my Uncle Bill was a lot of taxes, so if they think inheritance taxes are something new, they are goofy! I admit there was a farm attached—quite heavily attached—to the taxes Uncle left me, but it was so well snowed under that by the time I dug out the last line I had to slap it back again to keep the roof from caving in from age. If the inheritance tax goes far enough, we won't even be sure of our own tombstones.

As well, taxes never come single in spite of all Henry George said. The only people they really help are the newspaper cartoonists. With the rest of the population they have given rise to a lot of prejudice. Why, my brother, for instance, don't like to be known as a taxi-driver, because he's afraid people will think he's a revenue man.

Now I am not narrow-minded or uncharitable about this tax business. I realize the poor starving politicians can't be allowed to go on home re-lief. Probably their homes would have no sense of relief at all if they stayed home all day. Also I am perfectly well aware that the office holders have a short season of it, even four years isn't much, so naturally they have to provide for their lean years while they can, or some day they might have to go to work.

I know, too, that the Government Machinery has to be supported although why it can't come down to earth instead, is beyond me. Oh heck, what I mean is, I know that taxes are necessary for the Public Weal. Or maybe it's the Public Veal—you know, killing the fat-head calf. Aw, peppermints; I'll quit trying to be high-bat about it and admit that all I know is you've got to pay 'em or else—

So as long as taxes have got to be paid, why not make them popular? Nobody minds giving up their dough for something which gives them a thrill—why, they will even give up other people's dough for that. So in my simple feminine fashion, I propose that we quit taxing necessary things and tax according to what is known as the Putnam Plan.

To begin with, this plan would take the tax off of theater tickets and put it on wives who take singing lessons at home. Don't cheer, boys, this won't stop them.

The plan says further that there shall be a tax on every spectator at all sensational divorce or murder trials.

All malicious gossip shall be taxed at a rate of 20 per cent of the net income of the gossipier. And a tax of 5 per cent of the gross income of the gossipie.

All smoking room stories over one year old shall be taxed at the rate of 50 cents per repetition. With a tax-collector stationed at every cocktail party this source alone should bring the treasury ample funds with which to finance all of the President's appropriations and leave enough over for a bromo seltzer.

Practical jokes shall be taxed on a sliding scale. That gives me an idea! Can you just picture a fat woman stepping onto a sliding scale? Huh! So you won't laugh, eh? Oh well, what do I care? But this is a rich idea, this taxing practical jokes. And what I really started out to say was, the jokes would be taxed in proportion to their cleverness and originality. The dumber the joke the higher the tax. Joe Cook, for instance, would get off practically free.

The list of properly taxable things could go on practically endlessly, beginning with visits from mothers-in-law and ending with buttered parsnips, and such a tax list, far from making Mr. Taxpayer, the Forgotten Man and Mr. Average Citizen feel even more gloomy than they look from their pictures in the papers—well, far from making them feel oppressed, it would have them practically laughing out loud.

Nobody could object to seeing a guy pay a tax on a stale egg, or shell out ten bucks to the government for hiving said "Olive Oil" or "Abyssinia" as farewell to a pal.

In fact, this Perfect Putnam Plan if carried out properly, might even result in the happy populace digging up the tax money for their taxed brethren voluntarily, with song and dance, instead of giving the government a song and dance about not being able to pay at all, the way a lot of them do now.

But all this depends on my plan being carried out, and I don't mean feet first, either.

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**In Advance Class**  
"I thought you finished your correspondence school education."

"I did. Now I'm taking a parcel post-graduate course."

## IMPROVED UNIFORM INTERNATIONAL SUNDAY SCHOOL LESSON

By REV. F. B. FITZWATER, D. D., Member of Faculty, Moody Bible Institute of Chicago, & Western Newspaper Union.

Lesson for October 6

ISAIAH PORTRAYING THE SUFFERING SERVANT

LESSON TEXT—Isaiah 53:1-12.  
GOLDEN TEXT—But he was wounded for our transgressions, he was bruised for our iniquities; the chastisement of our peace was upon him; and with his stripes we are healed. Isaiah 53:5.

PRIMARY TOPIC—God's Best Promise.

JUNIOR TOPIC—Isaiah Foretells Jesus' Coming.

INTERMEDIATE AND SENIOR TOPIC—What Our Salvation Cost.

YOUNG PEOPLE AND ADULT TOPIC—The Suffering Savior.

The prophecy of Isaiah is the grand center of the Old Testament. It pictures the Servant of Jehovah with great wisdom gloriously executing the divine purpose of redemption at the cost of great suffering.

1. The Servant's Triumph (Is. 52: 13-15). The Servant here means the coming Messiah (42:1).

1. His wisdom (v. 13). He will deal prudently, for his name is Counsellor (9:6). He was filled with the spirit of wisdom and understanding (11:2).

2. He shall be exalted and extolled (v. 13). Being the mighty God, even Immanuel, Jehovah has highly exalted him (Phil. 2:9).

3. The appearance of the Servant (v. 14). Because of his marred visage, the Jews, who looked for outward signs of royalty and worldly splendor, were not attracted to him.

4. The issue of his ministry (v. 15). In his sprinkling of many nations he is revealed as the great High Priest, sprinkling the nations with his blood and cleansing them from their sins.

II. The Servant Despised and Rejected (53:1-3).

1. The unbelief of the Jews (v. 1). They despised the words of the prophet and failed to recognize the hand of the Lord in the miracles he wrought.

2. The origin of the Servant (v. 2). He sprang out of a stump of Judahism. The sad condition of the people at that time is expressed by "dry corn." He came among his own and they apprehended him not.

3. A man of sorrows (v. 3). As the Sin-bearer of the world he suffered untold sorrows. The primary cause of his grief was their contemptuous rejection of him.

III. The Vicarious Suffering of the Servant (53:4-6).

1. His griefs and sorrows were ours. Though innocent, he was loaded down with disease and pain; not his, but ours. This awful suffering was looked upon by the world as occasioned by sin.

2. He was beaten for us (v. 5). That which was our due was meted out to him. Notice the four significant words; "wounded," "bruised," "despised," "stripes." The word "our" shows that his sufferings were vicarious. The full meaning of the cross is comprehended in these words.

3. The reason (v. 6). All humanity, Jews and Gentiles, had gone astray. God had laid on him the iniquity of us all.

IV. The Death of the Servant (53: 7-9).

1. His strange silence (v. 7). He went as a lamb to the slaughter. How unlike men who, when wrongfully condemned, make a great ado.

2. Unconcern of contemporaries (v. 8). Though dying instead of the wicked people, they failed to discern that his suffering was in their stead.

3. Buried with the wicked and the rich. This was fulfilled in the crucifixion between two thieves, and burial in Joseph's tomb.

V. The Servant's Ultimate Victory (vv. 10-12).

1. His suffering expressed the divine will (v. 10). The Lord himself laid this burden upon Christ. He was delivered according to the determined counsel and foreknowledge of God.

2. A spiritual progeny resulted from his death (v. 10). Christ declared, "Except a corn of wheat fall into the ground and die, it abideth alone." The fundamental law of the universe, which is life out of death, found supreme expression in Christ's death on the cross.

3. Through death shall come the realization of his fondest hope (v. 11). "He shall see the travail of his soul and shall be satisfied."

4. The divine reward (v. 12). The divine Conqueror shall share the spoils of victory which by a strong arm were secured. Though he took the place of a sinner, it was for the purpose of bearing the sins of man and making intercession for the transgressor.

VI. The Servant's Suffering Historically Fulfilled (John 19:17-37).

When Jesus of Nazareth went forth bearing his cross to Golgotha, where they crucified him, the prediction of Isaiah was historically realized.

**Thought**  
In the end, thought rules the world. There are times when impulses and passions are more powerful, but they soon expend themselves; while mind, acting constantly, is ever ready to drive them back and work when their energy is exhausted.

**Influence**  
The ministry of personal influence is something very wonderful. Without being conscious of it, we are always impressing others by the power that goes out from our lives.