

The Automobile

STUDY OF ENGINE HELPS IN DRIVING CAR.

There is no factor in motoring more important than that piece of mechanism directly under the hood and known as the engine. If the engine does not go the car is quite useless. Consequently, it is important to select, in buying a car, a vehicle that is equipped with an efficient motor.

While it is no deep secret that there are various types of engines used to create power, it is safe to guess that just what these different types are is usually a rather hazy idea in the minds of most motorists. Yet it is well for automobilists to have some definite information which will lead to an understanding of this matter.

To begin with, it should be known that engine types divide themselves along the following lines, arrangement and number of cylinders, arrangement of valves and method of cooling. Most owners of cars will recognize where their own automobile engines come in for classification.

FUEL TYPES DESCRIBED.

Considerably over 90 per cent. of automobiles are propelled by the gasoline engine. There are a few that carry storage batteries and use electric motors for motive powers. There is a still smaller number that use a steam engine, the steam being generated in a boiler which is heated by burning gasoline or kerosene.

The gasoline engine is made in a number of forms, ranging from the engine with four cylinders in a line to the twelve-cylinder, which is the V-shaped arrangement, with six cylinders on each side of the "V." Between these two extremes there is the engine with six cylinders in a line, the eight-cylinder with blocks of four placed in the V-shaped and eight cylinders in a straight line.

As to the arrangement of the valves of an engine, some types have both valves arranged on one side of the

engine, some have one in the top of the cylinder and one in the side, some have both valves in the top and a few have the inlet valve on one side and the exhaust on the other. The arrangement of the valves has considerable to do with the efficiency of the engine, that is, the amount of power which is extracted from the gasoline used.

HOW HEAT IS ABSORBED.

Much of the heat generated by burning the gasoline is necessarily absorbed through the water jacket which surrounds the cylinders. The engines with the valves in the head have a regular shaped combustion chamber which reduces the water-jacketed surface to a minimum. Engines with valves on the side of the cylinders have pockets that are offset from the cylinder proper, which must be water-jacketed.

The great majority of the engines use valves of the "poppet" type, that is, valves that are shaped like mushroom, are pushed open by a cam and are returned to their seat by a spring.

A large percentage of automobile engines are cooled by water, the cylinders being surrounded by a jacket of water which absorbs the excess heat. The hot water is pumped to a radiator placed on the front of a car, which provides for the heat being carried off by the air.

In the air-cooled motor provision is made for bringing sufficient quantities of air directly into contact with the outside of the cylinders. In this way the excess heat is carried off directly by the air.

Every year finds a tendency toward standardization in automobile design. Still there is enough of a variety of types to select from to suit the individual's needs and tastes. The prospective automobile owner will find all types of engines well developed and effective in operation.

Dangerous Carbon Monoxide.

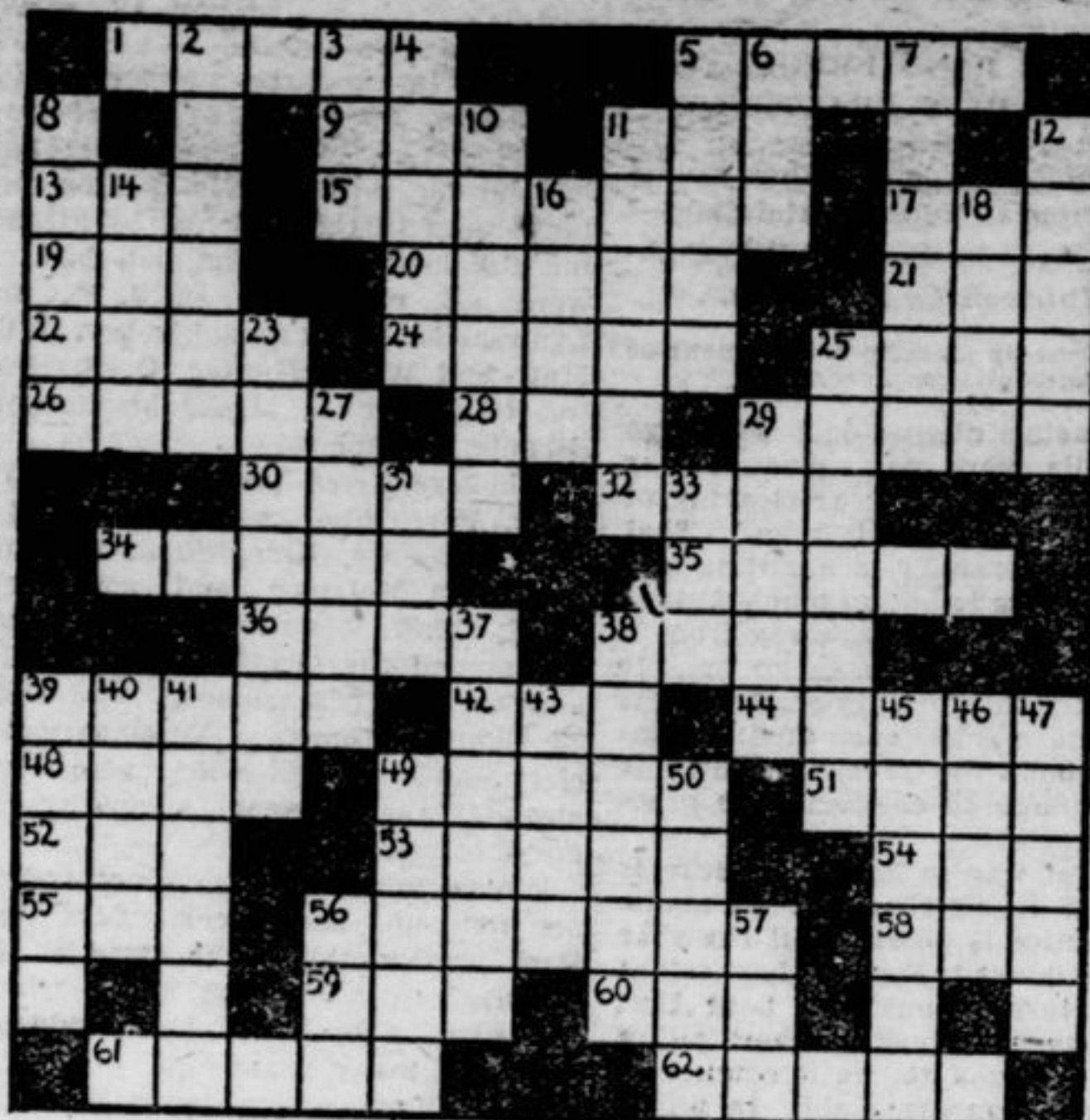
The gasoline engine is a useful invention, which has, through its serviceableness to the automobile, gone far to revolutionize our habits and modes of life. But it has one drawback. In the course of combustion—especially when the combustion is not complete—the exploding gas produces a gas which, under certain conditions, is dangerous to health and even to life. That gas is carbon monoxide; it is one of the most deadly of gases, and it is discharged from the exhaust of every car whose engine is running, whether the car is moving or not. We have several times spoken of the danger of starting an automobile engine in a closed garage, and, though the warning against this practice has been widely spread by newspapers and health lecturers there are a great many deaths caused by it every winter.

Carbon monoxide is the poisonous constituent of illuminating gas, especially water gas, and it is also produced in large quantities by burning coal. The air of stove-heated and furnace-heated houses is often contaminated to a dangerous extent with this gas, which escapes when the draft is poor. It may even pass through the wall of the stove if the iron gets red hot, and poison the air of the room sufficiently to give the occupants headache, nausea, loss of appetite, vertigo and a constantly irritable condition of the mucous membranes of the air passages. When the gas escapes continuously, it seriously affects the general health, for it lowers the powers of resistance and causes susceptibility to colds, grip, and pneumonia.

The gases from automobiles contain from four to eight per cent. of carbon monoxide, but as little as one per cent. is enough to produce serious, if not fatal, consequences. Of course this is still further diluted by the atmosphere in the street, but if there are thirty or forty cars crowded into a small area the dilution is not enough to make it harmless. Those who must continually breathe the air in the midst of automobile traffic that is much concentrated are likely to find themselves vulnerable to the attacks of common disease germs which they could easily resist if the air they took into their lungs were pure.

The site of the Mansion House, London's official residence for its Lord Mayor, was formerly a fruit and vegetable garden.

CROSS-WORD PUZZLE



SUGGESTIONS FOR SOLVING CROSS-WORD PUZZLES.

Start out by filling in the words of which you feel reasonably sure. These will give you a clue to other words crossing them, and they in turn to still others. A letter belongs in each white space, words starting at the numbered squares and running either horizontally or vertically or both.

- | HORIZONTAL | | VERTICAL | |
|------------------------------|-------------------------------|-------------------------------|--|
| 1—A necktie | 2—Specimen | 3—Poem | |
| 5—To nip | 4—Allowance in weight (pl.) | 5—Utters low murmuring sounds | |
| 9—An obstruction | 6—Inspector (abbr.) | 7—Divided | |
| 11—To demand payment | 8—Floating structures | 10—Shelf | |
| 13—To fortify | 11—To make more profound | 12—A duct | |
| 15—Obliterating implements | 12—A duct | 13—Basis | |
| 17—To be under obligation | 14—Basis | 16—To cook in liquid | |
| 19—A dandy | 16—To cook in liquid | 18—Carried as bodily covering | |
| 20—Penetrate | 18—Carried as bodily covering | 23—Ousted | |
| 21—An oath | 23—Ousted | 25—Old-time dance (pl.) | |
| 22—Informed | 25—Old-time dance (pl.) | 27—Ventures | |
| 24—Measure | 27—Ventures | 29—Philippine natives | |
| 25—Simple | 29—Philippine natives | 31—Protected slide | |
| 26—Horse | 31—Protected slide | 32—Night bird | |
| 28—Female sheep | 32—Night bird | 37—A fish | |
| 29—Underground worker | 37—A fish | 38—Ill temper | |
| 30—To make insipid | 38—Ill temper | 39—Something abnormal | |
| 32—Midday | 39—Something abnormal | 40—Religious period | |
| 34—Minute organism | 40—Religious period | 41—To make beloved | |
| 35—Twisted | 41—To make beloved | 42—Relative | |
| 36—To filter through | 42—Relative | 45—Dried grape | |
| 38—Bitter plum | 45—Dried grape | 46—Ancient Peruvian ruler | |
| 39—Runs away | 46—Ancient Peruvian ruler | 47—Looks slyly | |
| 42—One length of a course | 47—Looks slyly | 49—Sudden, sharp noise (pl.) | |
| 44—Long, narrow piece | 49—Sudden, sharp noise (pl.) | 50—African cattle-pen | |
| 48—To tear | 50—African cattle-pen | 61—Quarrels | |
| 49—To drive oakum into seams | 61—Quarrels | 62—Inclined | |
| 51—Mentally sound | 62—Inclined | | |
| 52—Finish | | | |
| 53—Big steamship | | | |
| 54—To refrigerate | | | |
| 55—Eroded | | | |
| 56—Like milk | | | |
| 58—To weaken | | | |
| 59—To imitate | | | |
| 60—Negative | | | |
| | | | |
| | | | |

Natural Resources Bulletin.

The Natural Resources Intelligence Service of the Dept. of the Interior at Ottawa says:

Canada has many admirers outside her borders, largely due to the efficient work of her energetic trade commissioners. They are putting Canada in the forefront as a commercial world power. Even in far-off Straits Settlements, A. B. Muddiman is working in the interests of Canada, and no doubt as the result of his efforts the Singapore Free Press has the following to say of this country:

"At present Canada's industrial future has hardly begun. Great towns do exist and some big industries, but for the present and for many years to come her energies will be absorbed by the conquest of the land and the bringing of it into cultivation. Looking at the spirit of her people and the past history of the United States, there can be no hesitation in recognizing in Canada one of the greatest world powers of the future, an achievement in colonization of which the British people can be immeasurably proud."

G. G. Van der Kop, editor of the "InterOcean," the only magazine published in the "Middle East," and who once visited this country, has had many times a good word to say for Canada.

Canada is a land of vast grain growing areas and a wide diversity of other vegetable resources. Canada is rich in minerals, her animal industries are a leading source of national wealth, her forests products provide

a large surplus for export, while the greater portion of the product of her factories find a market outside Canada. The quality of her products is interesting world consumers, and it is but natural that the thoughts of these foreign consumers should turn to a country that is capable of such production.

Do we as Canadians fully appreciate what we have, and are we doing our part in making them known?

Nasty, Nasty Man.
"Oh," wailed the child, "he's broken up my hoop with his nasty bicycle."
"Please, sir," she sobbed, "will you come and lock a nasty man up?"
"What's he been doing?" asked the man in blue kindly.

"Oh," wailed the child, "he's broken up my hoop with his nasty bicycle."
"Has he?" said the constable, preparing to go to the scene of the crime. "Well, where is he?"
"Oh, you'll easily catch him!" explained Winnie triumphantly. They've just carried him into that drug store."

His Error.
"Clarence," said his wife, "the maid has given notice because of the rude way you spoke to her over the phone yesterday."
"My dear, I'm so sorry. I thought I was speaking to you."

The water buffalo of the Orient can draw a load weighing more than a ton.

The prisons of England and Wales now number only about forty in all. More than twenty prisons have been closed since 1914.

THIS PIECE OF PAPER!

It Was Once Part of a Tree.

It is a big jump from a piece of wood to a sheet of paper, but this page probably started its journey paperwards as the trunk of a tree in some northern forest.

You see, to-day, the forests of Norway, Sweden, Canada, and the United States furnish the bulk of the world's paper-making material.

A sheet of paper is a sheet of vegetable fibres matted together, dyed, and surfaced according to requirements. And it is from wool that the fibrous part of the paper is obtained.

The wood-pulp, as it is called, is made in this manner. The trees are cut into logs, about two feet long, split and the bark and knots carefully removed.

The logs are ground up by revolving stone wheels, water being supplied to keep them cool, and to mix with the wood to form the pulp.

This pulp contains all the impurities after the first grinding, so it is strained through a wire sieve, which allows the finer pulp to pass.

The good pulp, still containing impurities, is now subjected to a refining process in a machine resembling two huge grindstones placed one on top of the other.

The top stone revolves, and the pulp is fed through a hole in this, being finely ground between the two stones.

Our "tree" is now ready to take on its first appearance in the form of a "sheet."

The refined pulp is passed over a wire gauze cylinder on to a felt conveyor which passes it to a pair of steel rollers, the top one taking up the end of the web of pulp and gradually winding it up itself.

When the necessary thickness has been attained, the pulp is taken off the roller, opened out and dried. In this state it is termed "half stuff boards."

Business Changes.

Never has there been a time when it was so necessary for the industrial executive to exercise vision. We have come to a day when a business can be made or ruined over night.

The announcement in the morning paper of the discovery of a new material or the unexpected development of an ingenious device may change the entire outlook not only for a few corporations, but for an entire industry.

In ten years from now our per capita consumption of certain articles will be double what it is to-day, while the consumption of other commodities will be no more than half of what it is at present.

In this present era, the foundation of success is chiefly judgment and vision. Labor does not create; nor does capital. It is man that creates. The real wealth of our country does not lie in our laboring class, but in our thinking class.

The worth-while executive is the fellow who can ask brass-tack questions, each one of which leads to darkened corners where the unasssembled facts are hidden.

It is not a question of brains, for the average person has more than he knows what to do with.

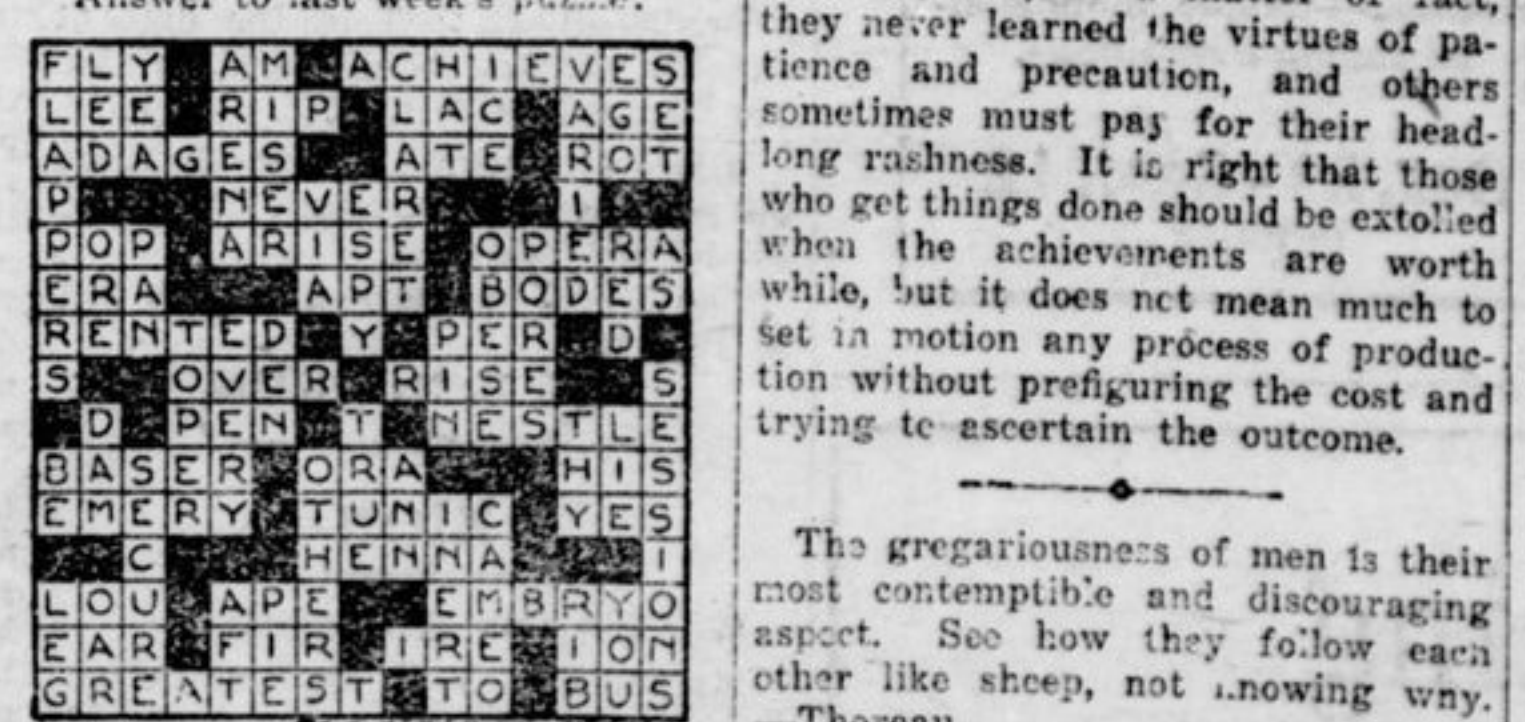
Not one person in a hundred uses the brains he has to as much as half capacity.

We need research. We also need to keep an eye to the future.

The airplane will be discarded as soon as a practical helicopter is developed; gas has supplanted coal in many industries because it is cleaner and does better work.

We must look to the future, or we are liable to find our business a "has been" a decade or so from now.

Answer to last week's puzzle:



The gregariousness of men is their most contemptible and discouraging aspect. See how they follow each other like sheep, not knowing why. —Thoreau.

WINNIPEG—THE NEW FUR CENTRE

The largest primary receiving point for furs in Canada, is the claim now being put forward by Winnipeg as a result of the outstanding position that city has recently acquired as a shipper of furs. Fifty years ago the trade of Winnipeg was largely in furs, but with the gradual settlement of the Prairies and the encroachment of civilization on the haunts of wild fur-bearing animals, agriculture and manufacturing became of more importance. Of recent years, however, Winnipeg has again become a prominent fur-receiving point and the establishment of the Winnipeg Fur Auction Sales Company two or three years ago definitely placed that city in a position of some consequence insofar as the fur trade is concerned.

One of the most important contributing factors to the growing importance of Winnipeg's fur trade is the more pronounced activity of the trappers. The rapid expansion of the fur-farming industry of Canada in recent years has tended to overshadow the value of this source of raw fur peltry. In the northern areas of the Dominion trapping is largely the chief means of subsistence of the inhabitants, and as the catch is marketed through trading companies or commission agents, its importance perhaps is not generally fully appreciated.

The Settler-Trapper Increasing.

Since the earlier days of settlement fur trapping has formed no insignificant share of the revenue of the settler, and at present, in some districts away from large communities, it is still the practice of the farmer, after he has garnered his crops, to go into the bush and set out his line of traps. Quite frequently the trapping grounds are a considerable distance away, and it is not unusual for the settler to be gone all winter and return with his catch only when the spring thaws have set in.

The settler trapper is to be found in larger numbers in Western Canada than in the older established farming districts of the East. This is probably due to the fact that many large lumbering camps in the East, operating throughout the winter months, absorb the surplus farm labor. On the other hand, the industrial activities of the West have not yet reached a point where they are capable of offering employment to the farmer during the slack period of farming operations. Therefore it is essential to the active farmer, who is desirous of increasing his income, to look to other means of employment, and in trapping he finds work which, in good seasons, often returns him considerable profit.

With this large and ever-growing settler, trapper and Indian population in the West, it is not surprising that Winnipeg has again come to the fore as a fur centre. Many large fur companies of international scope have their headquarters there and also have trading posts established throughout the northland. These companies handle the raw product direct from the trapper to their retail stores in the more important British, Continental and American cities.

Last year it is estimated that over \$5,000,000 worth of furs, \$2,000,000 of which represents the value of pelts brought through the fur auction and the balance private sales, were handled in Winnipeg. While the fur sales held in Winnipeg are not in the same class with those of Montreal, New York or London, for the reason that the selection of furs put up for sale is somewhat limited as they are largely made up of the natural production of the country, the collections offered are purely Northwestern furs and are not mixed with inferior grades. This important feature of the sales is becoming more widely recognized and is reacting most beneficially to the fur trade of Western Canada.

The gregariousness of men is their most contemptible and discouraging aspect. See how they follow each other like sheep, not knowing why. —Thoreau.



For Dress Doesn't Clothe.
"You wife must spend a terrible amount of money on her clothing."
"You're wholly wrong—she spends it all on her dress."

Boomed by Books.

A holiday resort can have no better advertisement than a widely-read book written by a popular author.

Hall Catne's novel, "The Doemster," sent tens of thousands of people flocking to the Isle of Man, where the scene is laid.

Holiday makers followed "Lorna Doone" to Emcor and Ilfracombe, and Combe Martin in the same district rose to fame as the scene of Marie Corelle's "Mighty Atom."

Yarmouth has benefited greatly by Dickens's "David Copperfield."

Next to a popular novel, a popular song is probably about the best free advertisement for a holiday resort. The adjective "glorious," for example, will probably be associated in people's minds with "Devon" for many years to come on account of the jellied sea called.

STORIES OF WELL-KNOWN PEOPLE

Disappointed.
Becoming reminiscent of Jay, Mr. Will Fyfe, the famous comedian, told the story of an incident that happened in a theatre he used to play in.

Ordinarily, prices ranged from one shilling, but came along they were twice as much.

A fairly well-known appearance in Hamlet, duly increased. After the audience was dispersed, the old Scot, Jack, went to another "Weel, Jack, what did you say?"

"Oh," answered Jack, "I liked you, but I don't think I'll ever see you again. He's no whit I was called Hamlet."

What interested Mr. Finck, tells an amusing story of a wealthy manufacturer's dinner party to a number of friends.

His wife was an accomplished pianist, and at the urgent request of the guests, while awaiting the dinner.

She finished a piece of music greeted with a burst of applause, and as she rose from the piano her husband turned to one of the men present and asked:

"Would you like a son-in-law, Mr. Blank?"

"Well, I don't mind," he replied, displaying instantly interest in the proceedings, the hitherto evinced. "I had my eye here, but I think I can do better."

An Amended Notice.
There is a grim humor story told recently by Mr. Dewey, the American statesman, dinner of the New York Times.

It concerned a certain student in Arizona, who made off all the money under the name of "Bank suspended."

"That night he was interviewed several angry depositors, with him in approved Western and then amended the notice: "Bank president suspended."

Didn't Waste It.
According to Sir Harry D. Lushbur is generally dry. But Sir Harry often relates the Yankee story which, he says, many dry Scottish yarns.

A stranger arrived at a village, and during his first walk the only street, met a man against the door of the station.

"Pretty quiet place, this?"

"There's a quieter place than this," replied the village justice.

"Have you lived here all your life?"

"Not yet!" came the reply.

After that, the stranger gave up.

Lady Byng Collects Canadian.
The secret of Lady Byng's preference for the great and the beautiful gardens of houses rather than the formal marks receptions indoors was during the visit to Victoria, governor-general of Canada.

Lady Byng is an ardent flower and a keen gardener. She came to Canada with no less than 400 varieties of the beautiful garden of home. Accompanying her to England have come over 200 that they are to receive attention. Of the 400 only 100 failed to thrive after being sent across the Atlantic and then in English soil.

The Marshal and the V.C.
This might be called an anecdote. Field-Marshal Earl Haig or of Cyrus Peck, or both. The tall and bluff Canadian Victoria Cross acted as chairman for the soldier, leader of the British in the Great War, when the latter shall addressed a crowd of "Victoria war veterans on the occasion of the 40th anniversary of the British Empire. At his speech Colonel Peck said:

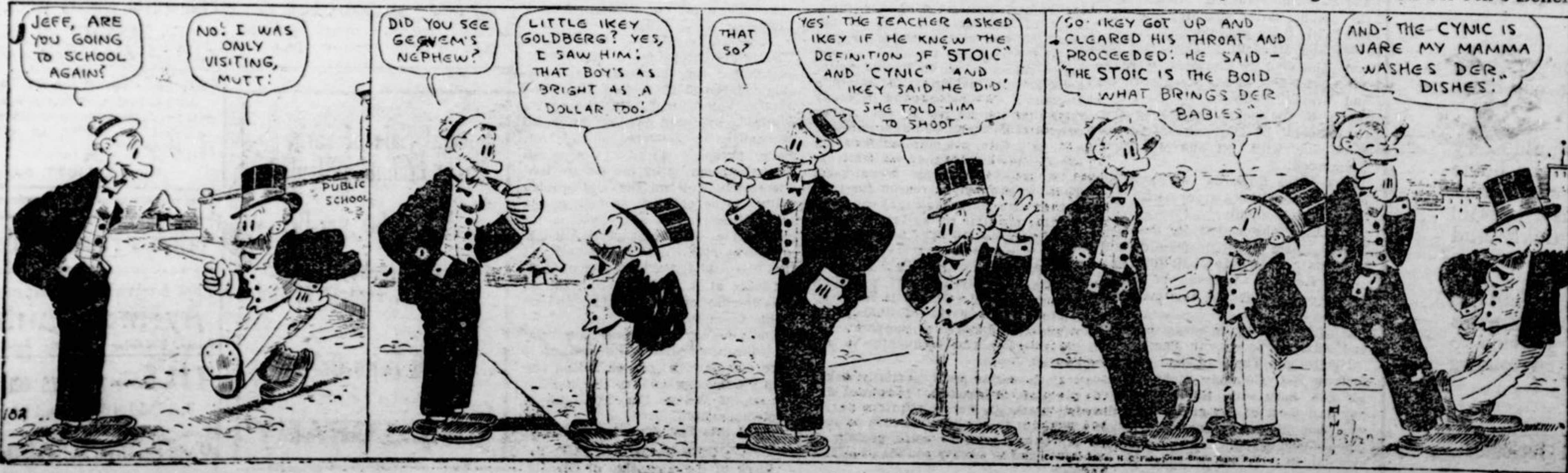
"And there's one other I want you all to be on hand to to Earl Haig when he leaves to-morrow afternoon. I know he's a pleasant duty for all of us."

Earl Haig was the first to joke and lead the laughter.

"I am always making broad that," commented the colonel. "I know, someone has written me that if I would be pained at this of a friend the other day, and that I would be delighted."

When Our Brains Stop Growing.
The average man may know and have more experience than a scholar of fourteen, but one claims that his real thinking often about the same level as that of a youngster.

MUTT AND JEFF—By Bud Fisher.



Little Ikey Goldberg Shows Off for Jeff's Benefit.