

Popular Science

FOUNDED **MONTHLY** 1872

INVENTIONS
—
DISCOVERIES
—
RADIO
—
AUTOMOBILES
—
AVIATION
—
HOME WORKSHOP



FRANK
MURCH

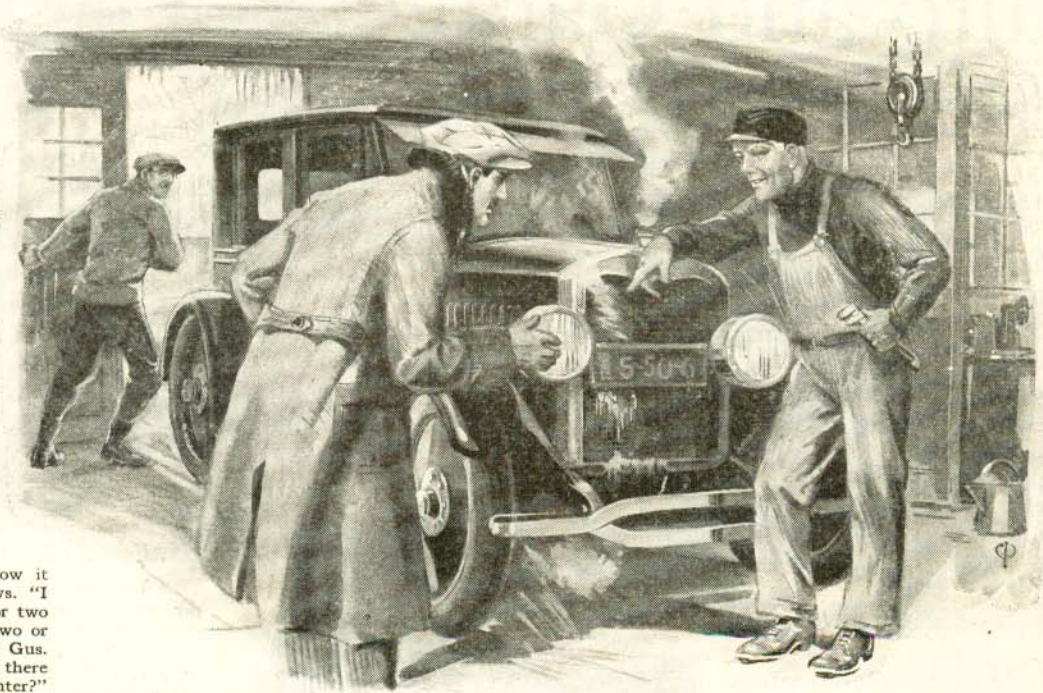
DECEMBER

Fifty miles an hour on an ingenious ice-cycle — See page 32

25 CENTS

In this Issue—Radio Prize Contest

When Jack Frost Hits Your Car



Frozen!

"Blamed if I can see how it could freeze," said Mathews. "I put alcohol in the radiator two or three weeks ago." "Two or three weeks ago!" scoffed Gus. "Did you expect it to stay there for the rest of the winter?"

Gus and Joe Tell How to Keep the Works from Freezing—Some Useful Hints for Easy Starting

By Martin Bunn

"HEY, Gus!—Joe! Open the door!" Mathews yelled at the top of his lungs, as he pulled up in front of the Model Garage one bitterly cold morning. Billowing clouds of steam were rolling up from underneath his car and the driver was apparently in no mood to wait calmly.

"Righto! Just a second—the door's stuck," came faintly to Mathews' ears, followed by a vigorous thumping that jarred the door loose.

Mathews drove in, shut off the ignition, climbed out, and began rubbing his ears vigorously.

"Dang it! Look at her steam!" he growled. "You ought to be ashamed of yourself, Gus, for fixing that pump so rotten the last time. It's busted already. Worked fine when I started out, but before I'd gone a mile she started to blow off like a durned old tin kettle."

"Humph!" grunted Gus non-committally. "So the pump has gone bad, has it? Well, then, how do you account for all those fancy looking icicles hanging on the radiator?"

"What icicles?" snapped Mathews. "Can't you see it steaming? How could there be icicles—"

"Well, I'll be durned!" he gasped amazedly as his eyes took in the long streamers of ice. "The radiator was all right when I left the garage; not a leak in it. I looked at it specially, because it is so cold this morning."

"Yes," said Gus, "and the reason it didn't leak then was because ice doesn't run like water. You probably had a radiator full of ice right then. In a few

hours more, the water in the cylinder jackets would have frozen solid, too, and then you would have had to pay for something besides a leaky radiator, I can tell you!

"When you got the motor started, the pump worked all right, but the ice in the bottom of the radiator kept the water in the cylinder jackets from circulating, and it just naturally had to boil. Then the steam started to thaw out the frozen part of the radiator and the water ran out of the burst seams, hit the cold outside air and formed icicles."

"Blamed if I can see how it could freeze, anyway," said Mathews. "I put a lot of alcohol in the radiator not over two or three weeks ago."

"Two or three weeks ago!" scoffed Gus. "Did you expect it to stay there all winter? After that warm spell last week, I'll bet there wasn't much more than a smell of alcohol left this morning. That's the trouble with alcohol. It evaporates so quick. No doubt about its being the best anti-freeze compound, but you have got to watch it careful—"

"JOE, show Mathews one of those alcohol hydrometers we got in last week. That's the answer to the question of how much alcohol you've got in the radiator. See," he directed, as Joe handed him a glass tube with a little float inside. "It works just like an ordinary battery hydrometer only the scale reads the other way. Alcohol makes the water lighter, and this shows just what

temperature the solution will stand without freezing by floating higher or lower on the scale."

"Bet you that won't be the only freeze-up job we'll get today," said Joe, as Mathews, convinced at last that the freezing was his own fault, left the garage.

"What's the use of betting against a sure thing?" replied Gus. "There's the next one on the phone right now," he muttered, as he clamped the receiver to his ear.

"MODEL Garage—Wilson speaking. What can I do for you?" said Gus.

"This is—McKay—Gus—can't get the old—boat going—this morning—come out and help me!"

Evidently the man at the other end of the line was all out of breath.

"What's the matter—battery gone down on you?" Gus inquired.

"Sure," answered McKay. "But that's not all. I've been turning her over by hand till I'm all tuckered out, and I can't get a pop out of the motor! Be a good sport, Gus, and come out right away, won't you?"

"All right," said Gus. "I'll be up there in about 10 minutes."

McKay was a good customer of the Model Garage, and a good scout, in the estimation of the garage men. But what he didn't know about the interior mechanism of an automobile would fill a large book chock full.

By the time Gus got there, McKay had cranked the motor over and over until he

(Continued on page 163)



**Chosen Out of 100 Applicants
A Plan That Doubles Salaries**

"To LaSalle goes the credit for training me so that I was able to turn a refusal into an acceptance in preference to over one hundred other applicants," writes E. W. DeMotte, a New York man. "I cannot give too much credit to LaSalle and its Placement Department for the success of my application for this very fine position." LaSalle trained him. LaSalle got him the job.

Copy of Plan Free

LaSalle has added millions and millions of dollars to the earning power of its members. If a successful career is worth 2c and two minutes of your time, check on the coupon the field of advancement that appeals to you, fill in your name and address, and place it in the mail TODAY.

LASALLE EXTENSION UNIVERSITY
The World's Largest Business Training Institution

Dept. 1283-R Chicago
Without obligation, tell me about your salary-doubling plan as applied to the business field checked below.

- | | |
|----------------------------|---|
| Modern Salesmanship | Industrial Management |
| Business Management | Modern Foremanship and Production Methods |
| Higher Accountancy | Personnel and Employment Management |
| Expert Bookkeeping | Banking and Finance |
| C. P. A. Coaching | Modern Business Correspondence and Practice |
| Traffic Management | Business English |
| Railway Station Management | Commercial Spanish |
| Law—Degree of LL. B. | Effective Speaking |
| Commercial Law | |

Name.....
Present Position.....
Address.....



High School Course in 2 Years

This simplified, complete High School Course—specially prepared for home study by leading professors—meets all requirements for entrance to college, business, and leading professions.

Over 200 noted Engineers, Business Men, and Educators, helped prepare the special instruction which you need for success. No matter what your inclinations may be, you can't hope to succeed without specialized training. Let us give you the practical training you need.

20 Other Courses

- | | |
|-----------------------|------------------------|
| —Architect | —Electrical Engineer |
| —Building Contractor | —General Education |
| —Automobile Engineer | —Lawyer |
| —Civil Engineer | —Machine Shop Practice |
| —Structural Engineer | —Mechanical Engineer |
| —Business Manager | —Steam Engineer |
| —C. P. A. and Auditor | —Sanitary and Heating |
| —Bookkeeper | —Surveyor and Mapping |
| —Draftsman & Designer | —High School Graduate |

Name.....
Address.....

What Could You Do with \$50—?

See the Cash Prize Offer on Page 4.

Winter and Your Car

(Continued from page 64)

was speechless. Gus found him leaning limply against the side of the garage and glaring ferociously at the car.

Gus walked around the car and carefully looked over the motor, poking it here and there like a doctor with a patient. He tentatively pushed the self-starter pedal, and was rewarded by a faint humming sound. He snapped on the lights for a second and they glowed dimly. After that he unscrewed the radiator cap and squinted down the opening.

"YOU sure have got yourself into a pretty pickle this time!" he growled. "Everything is on the blink! Let's see—you came out here and hopped in and stepped on the self-starter. Instead of turning over the motor, the self-starter let out a clank or two, and after that nothing happened. Am I right?"

"As usual!" replied McKay dimly. "What happened?"

"Old Jack Frost has got you, that's all," said Gus. "The whole works is frozen up solid. Radiator full of ice—cylinder jackets frozen and cracked—starter motor shaft sheared off. That happened when you stepped on it the first time. You see the pump is frozen, too, and that and the cold-thickened oil wouldn't let the motor turn over at all. First the pump shaft broke off and then the starter motor shaft let go under the strain. It's funny how easily steel cracks when it's cold. After that, you were able to crank it by hand because you primed it and the gasoline thinned out the oil. The battery is almost exhausted. That will freeze up too if we don't watch out."

"But if you get it started right away, the generator will charge it up in short order," McKay said hopefully.

"You're certainly a hopeful fellow!" grunted Gus. "The only way this car goes out today is on the end of a rope, and there's a rope handy in my toolbox."

"Be careful, now, not to run into me, if I have to stop sudden," he warned, as he started to tow McKay's car toward the Model Garage.

AT THE garage, Gus inspected the car closely; when he turned to McKay with a more cheerful expression on his face. "It's not as bad as I thought," he said. "The crack doesn't go through into the cylinder wall, so I guess we can weld it up. Then, after we get the radiator soldered up, the pump shaft fixed, and the starter motor working again, I guess you can take it home."

"How long will that take?" "Two days at least," said Gus, "maybe more if we have to wait for a new shaft for the starter motor."

"All right, if that's the best you can do," McKay agreed. "But what I want to know is how to get the motor started after it has been standing in a cold garage all night. I've tried priming and that helps some, but usually the battery is nearly dead before she finally starts."

"Well," Gus began as he reached in the toolkit for another wrench, "there are a

(Continued on page 164)



Needed in Aviation!

DO you love adventure? Do you want to make big money? Although aviation is still in its infancy there is a crying demand for men with courage, nerve, and self-reliance—ambitious men who are looking for a new field. For those who qualify there will be thousands of highly paid jobs.

Amazing Opportunity in the Airplane Industry

Yes, as yet, aviation is in its infancy, but now is the time to get in. In the automobile industry and in the moving picture business hundreds of men got rich by getting in at the start. They made their success before others woke up.

Think how much aviation has progressed in the last few years. Commercial air lines have already proved themselves successful both in Europe and America. Great men predict that in the near future there will be air-freight lines—organizations as large as our railroads are today. AVIATION IS NEW. It clamors for every young man.

Be an Aviation Expert—\$50 to \$100 a week

The study of aviation is as fascinating as the actual work. Only one hour of spare time a day at home and we teach you the basic training. You will find every lesson packed full of interest. Student S. F. McNaughton, Chicago, says, "Your lessons are like a romance, and what is more, after one reading the student gets a thorough understanding." Men who have had actual experience guide you carefully through your training. They select the lessons, lectures, blueprints, and bulletins. Once you start you can't get enough of it. Here are some real jobs. Which one do you want? Aeronautical Instructor, Aeronautical Engineer, Aeronautical Contractor, Aeronautical Salesman, Aeroplane Repairman, Aeroplane Mechanician, Aeroplane Inspector, Aeroplane Assembler, Aeroplane Builder.

Big Aviation Book FREE

Send coupon below for our new FREE book just out entitled, "Opportunity in the Airplane Industry." It is interesting and instructive. Get yours before edition is exhausted.

AMERICAN SCHOOL OF AVIATION
Dept. 1369, 3601 S. Michigan Ave., Chicago

AMERICAN SCHOOL OF AVIATION
Dept. 1369, 3601 S. Michigan Ave., Chicago

Without any obligation send me your free book "Opportunities in the Airplane Industry," also information about your Home Study Course in Practical Aeronautics.

Name.....
Address.....
City..... State.....

Train At Home
for a fine
ELECTRICAL
JOB and
a big **RAISE**
IN
PAY!



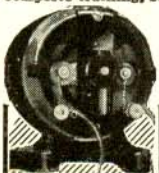
If you are now earning less than \$40 a week
—if you want to be an **ELECTRICAL EXPERT** —if you want to step quickly into the class of men earning from \$60 to \$250 a week—*write me at once!* This million dollar school offers ambitious fellows their big opportunity to learn every branch of Electricity at home in spare time by a new, practical **JOB-METHOD**.

Go into ELECTRICITY!
—the Business of a Million Opportunities

Be an Electrical Expert. Go into the one great industry where it's easy to get to the top, to make money, to make a real success. You don't need money in the bank or "pull" to get ahead in Electricity—all you need is training, honest, complete training, such as I guarantee.

Learn Electricity Quick by Dunlap "Job-Method"

Rapid progress is made by my students because I train them on actual Electrical jobs, with standard-size tools and materials which I supply them free. The first half of my training is Applied Electricity—a complete course in itself. In the second half I give you Electrical Engineering subjects. I give you Electrical Drafting, Radio, Automotive Electricity, and many other valuable subjects all for one small price—on easy terms.



\$10 MOTOR used in 4 outfits which I give to every student. A big, man-size motor, same type as used in the great power plants. It is shipped knock-down so you get actual practice in armature winding and assembling. Runs on D. C. or A. C. current or 32v farm electric system.

Training Built by 23 Noted Engineers

This is not a one-man, one-idea school. 22 famous Engineers from Westinghouse, Western Electric, Massachusetts Inst. of Technology, and many other great corporations and universities helped me make this course complete.

Free Job-Service for Students and Graduates

We have supplied thousands of jobs. Free both to Students and graduates. This Job-Service keeps in touch with great electrical employers in America.

Get My PAY-DOUBLING OFFER

Before you put your time and money into home-training, you want to know if it will lead to a better job and bigger pay. I'll answer that in plain English. Get my catalog, my wonderful new guarantee, my sensational offers—quick.

The AMERICAN SCHOOL is chartered under the laws of Massachusetts, as an educational institution not for profit. Est. 20 years. Over 200 Executives, Engineers and Educators have prepared the texts used in these wonderful American School home-study courses in Electricity.

CHIEF ENGINEER DUNLAP, Electrical Division
AMERICAN SCHOOL, Dept. E975, Drexel Ave & 58th St., CHICAGO

Chief Engineer Dunlap Dept. E975, Chicago
 I want to be an Electrical Expert. Please rush guarantee, job-service facts, complete information, money-saving offers.

Name

Address

& Music Lessons
WITH AN ACCREDITED SCHOOL
At Home

A Complete Conservatory Course By Mail Wonderful home study music lessons under great American and European teachers. Endorsed by Paderewski. Master teachers guide and coach you. Lessons a marvel of simplicity and completeness.
Any Instrument Write telling us course you are interested in—Piano, Harmony, Voice, Public School Music, Violin, Cornet, Mandolin, Guitar, Banjo, or Reed Organ—and we will send our Free Catalog with details of course you want. Send now.
UNIVERSITY EXTENSION CONSERVATORY
221 Siegel-Myers Bldg. Chicago, Illinois

Winter and Your Car

(Continued from page 163)

lot of little things you can do that will help a lot. Setting the spark plug points real close is one of them. That helps, because when the motor is very cold, it takes a lot of juice out of the battery to turn it over. That means there isn't much left to work the spark coil, so if you have the points set too wide, the spark hasn't pep enough to jump the gap. Another way is to use a separate set of dry cells connected so that you can work the ignition from them while the starter motor is working. One set of dry cells will last all winter for this kind of service if you are careful to throw the switch over to the storage-battery current just as soon as the motor starts to turn over under its own power."

"SEEMS to me," remarked McKay, "that there ought to be some way to make the motor turn over easier so that the starter motor would not have so much to do. How about using light oil?"

"There is only one rule to follow on the oil question," Gus stated emphatically. "Stick to the recommendations of the makers of the car. If you will glance over your instruction book again you will see that they tell you what brands to use in winter.

"With dry batteries rigged up and the radiator filled with the proper mixture of water and alcohol, you ought to have no trouble till the thermometer gets down below fifteen degrees. When it gets much colder than that—say about zero—even extra batteries and light oil won't get the motor going, simply because the gasoline we're getting these days doesn't form gas enough to give an explosion.

"A radiator cover will help some, but if you leave the car for hours at a time outdoors in zero weather, everything will get so cold that she won't start, no matter how long you keep the self-starter going. When you're up against that proposition, a good stunt is to pour a teaspoonful or so of ether into the air intake of the manifold. Ether evaporates nearly as well in cold weather as it does in hot, and the motor will start pronto. If you get a pail of boiling hot water and pour it over the intake manifold of the engine, that also will make it start right away.


"There's another new device out now that will start the motor, no matter how cold it is. Hey, Joe!" he called out. "Bring out one of those electric-heater primers the right size for McKay's car.

"SEE here," he continued, holding up what looked like a thick gasket. "This goes in between the manifold and the carburetor. When you press the button, the little spiral wire in the middle gets hot and that heats the gasoline as it comes up from the carburetor and turns it into gas. The electric current comes from the storage battery, of course. Shall I fit one when I bolt the carburetor on again?"

"Sure thing!" exclaimed McKay. "That ought to work out fine. It's a good thing I have a radiator cover, or you'd be trying to sell me one of those too!"

(Continued on page 165)

Young outdoor men wanted



To a few sturdy young men—lovers of fresh air and sunshine—who want to get away from the grind of indoor work—John Davey's national organization, The Davey Tree Expert Company, offers an exceptional opportunity. Constantly increasing demand will create a limited number of openings. Those young men selected will be thoroughly trained by the Company and given a permanent position if they make good. If you are single, between 20 and 30 years of age, free to travel, healthy, industrious, having a good practical education, and able to furnish satisfactory references, you have a good chance to qualify. Pay is good at start, advancement assured on merit. We want only men who desire permanent employment in a growing organization and will accept only clean, sturdy young men, thorough Americans, not afraid of vigorous outdoor work. Write for additional information and qualification blank to serve in place of personal interview. The Davey Tree Expert Co., Inc., 302 Federal Bldg., Kent, Ohio.

A Test Every Man Past 40 Should Make

Medical authorities agree that 65% of all men past middle age (many much younger) are afflicted with a disorder of the prostate gland. Aches in feet, legs and back, frequent nightly risings, sciatic pains, are some of the signs—and now, a well-known American scientist has written a remarkably interesting Free Book that tells of other symptoms and just what they mean. No longer should a man approaching or past the prime of life be content to regard these pains and conditions as inevitable signs of approaching age. Already more than 10,000 men have used the amazing method described in this book to restore their youthful health and vigor—and to restore the prostate gland to its proper functioning. Send immediately for this book. If you will mail your request to the Electro Thermal Company, 402 Main Street, Steubenville, Ohio—the concern that is distributing this book for the author—it will be sent to you absolutely free, without obligation. Simply send name and address. But don't delay, for the edition of this book is limited.
Western Office, Dept. 40-T, 711 Van Nuys Bldg. Los Angeles, California

ANY BOOK IN PRINT

Thousands of Titles at **1/2 Price and less**

Delivered at your door. We pay the postage. Standard authors, fine editions, new books, all at biggest savings. Be sure to send postcard for Clarkson's catalog.
FREE Write for our great book catalog immediately for this book. This catalog is a short course in literature and is so used by some of America's leading universities; 800,000 book lovers buy from it. Free if you write now.
DAVID B. CLARKSON THE BOOK BROKER
1220 CLARKSON BUILDING, CHICAGO, ILL.

Take Your Profit From Now On

300% advance on Crude Rubber drives Mr. Car owner to have his Tires repaired, instead of buying new ones.
EASY TO LEARN
We give you instructions. Plants \$100.00 and up. Our free Catalog tells you how to save 50% on a plant we have near you.
Instruction Book for \$1.00 bill
EQUIPMENT EXCHANGE
120 E. 11th St. Los Angeles, Calif.

See — the big Prize Offer on page 4 of this issue.

Quickly Learn to Play Hawaiian Guitar

Play Like This Native

Bring the romantic, enchanting, entrancing and melodious strains of the great instrument of the Hawaiian Islands into your soul. Become popular and successful. This short cut method of home instruction enables you to quickly master Hawaiian Guitar, so you will play as well as Native Hawaiians.

Our staff of Hawaiian instructors have perfected a method of teaching, so simple, that without musical knowledge, you quickly learn to play real music from notes. Simple as learning your A, B, C's and it will not be long before you will play latest Broadway hits.

Only four simple motions to learn. You will then play any music, whether it be popular, dance or classical. Almost from first lesson you play love songs like Aloha Oe.

To help you get started, we furnish free when you enroll as a student, a beautiful, full tone, genuine, \$18.00 Hawaiian Guitar. Only 1,000 free instruments given away; if you want to get in on free offer write for particulars at once—you must act quickly.

New Invention—Kno-All-Chart

Quickly Teaches You How to Play The newest invention of our Hawaiian instructor: which is exclusively used by us and which we call the "Kno-All-Chart," quickly teaches you how to play and read notes. So simple is this device that anyone can understand it and begin to play immediately.

Picture Method Easy

We do not depend upon our printed instructions alone for your success as a student, but we also supply you with many pictures of our professors playing. This enables you to imitate the pictures. Isn't this easy?

Phonograph Records Free

As an additional guide, we also furnish you with phonograph records of our Hawaiian instructors' own playing of the piece you are learning. This practically brings our professors from our studio to your own home and enables you to listen to their playing just as if they were actually in front of you.

Genuine \$18.00 Hawaiian Guitar Free

Enroll as a student and secure free, a beautiful, full tone, genuine \$18.00 Hawaiian Guitar. We also furnish every bit of equipment so it is never necessary for you to spend an extra penny. When you graduate, you get a beautifully engraved diploma and after graduation, we also give you six months free service and consultation. Send for free particulars now.

Send for Free First Lesson and Book

So positive are we you will become one of our students, that if you write at once, we will send you free, our first lesson which will enable you to see just what you can expect when you enroll. You will also receive our big book of full particulars. Write for your copy and free lesson today. You will be one of the lucky ones to have a free Hawaiian Guitar reserved for you—write at once.

Hawaiian Studio No. 569
of New York Academy
of Music
100 Fifth Ave.,
New York, N.Y.

Free
\$18 Hawaiian
Guitar when
you enroll

Winter and Your Car

(Continued from page 164)

Gus smiled. "After you get the bill for this repair job," he said, "you won't have the price of any fancy accessories.

"One thing I nearly forgot to mention about that cold-weather-starting proposition! Always hold the clutch out when you step on the self starter. That disconnects the transmission gears, and in cold weather, when the transmission oil is thick and gummy, it takes a lot of power just to turn the gears over.

"Of course you want to remember, too, that just getting the motor started is not the whole story in driving a car in cold weather. You can put a car on the bum mighty easy if you don't watch out. In real cold weather the grease in the transmission is likely to freeze solid, and when it is in that condition the gears just cut grooves through it and they run practically without lubrication until the friction heats up the grease and melts it. Hard grease is bad medicine in cold weather. The transmission should be filled with transmission oil instead of grease. The same applies to the rear end."

"Gosh!" McKay exclaimed. "That's a whole lot to try to remember all at one time. Guess I ought to write it down."

"You'd better learn your lesson this time," said Gus. "The next time you freeze this boat up I'll charge you double!"

Correct Answers in Contest

(Continued from page 26)

fire. B—The gasoline tank of a Ford car is not at the back of the car as shown, but under the driver's seat.

Picture No. 5. A—John is taking Mary's picture while Mary is in the shade and the lens of the camera is pointed directly toward the sun. These positions should be reversed. B—The handle of Mary's parasol is drawn at a wrong angle in relation to the ribs.

Picture No. 6. A—John is nailing down adjacent sides of the netting instead of opposite sides. This will cause the netting to bulge. B—The teeth of the saw hanging at the side of the bench are drawn in reverse so that the saw will cut on the pull instead of the push.

Picture No. 7. A—John is wheeling coal over the lawn in a wheelbarrow without first laying boards to protect the grass. He will ruin his lawn. B—The artist shows water coming out of the hose, although the hose is not connected with the faucet.

Picture No. 8. A—John is building the vegetable bin too near the furnace. The heat will spoil the vegetables. B—The drawing is out of perspective. The broom shows that John's feet are far away from the bin, yet his hands are close enough to nail the board at the top.

EDITOR'S NOTE. Our purpose in withholding publication of the correct answers for the June Contest until this issue, instead of publishing them last month, along with the names of the first prize-winners, was to preclude any possibility of unfair competition. While our November issue was in the process of manufacture, the Grand Prize Contest, involving all four Monthly Contests, was still open to entry.



\$2500 REWARD For the Capture of An Unknown Man

TWICE he had entered the St. Clair Mansion. What was he after? Who? What was in danger?

Berteau, the famous detective, had warned St. Clair that the mysterious marauder would come again. And now—a noise in the passage! The creak of an opening door. A shot in the dark! A capture!

Is this wounded stranger the mysterious intruder? Who could tell? Yet Berteau identified the man without hesitation and won the \$2500 reward.

How did he do it? Easy enough for the Finger Print Expert. He is the specialist, the leader, the cream of detectives. Every day's paper tells of their wonderful exploits in solving mysterious crimes and convicting dangerous criminals.

More Trained Men Needed

The demand for trained men by governments, states, cities, detective agencies, corporations, and private bureaus is becoming greater every day. Here is a real opportunity for YOU. Can you imagine a more fascinating line of work than this? Often life and death depend on finger print evidence—and big rewards go to the expert. Many experts earn regularly from \$3,000 to \$10,000 per year.

Learn at Home in Spare Time

And now you can learn the secrets of this science at home in your spare time. Any man with common school education and average ability can become a Finger Print Detective in surprisingly short time.

Free Course in Secret Service

If You Enroll Now!

For a limited time we are making this special offer. A Professional Finger Print Outfit, and a Complete Course in Secret Service Intelligence absolutely without extra cost to all who enroll before this offer is withdrawn. Write quickly for fully illustrated free book on Finger Prints which explains this wonderful training in detail. Don't wait until this offer has expired—mail the coupon now. You may never see this announcement again! You assume no obligation—you have everything to gain and nothing to lose. Write at once—address

University of Applied Science
Dept. 13-69, 1920 Sunnyside Ave., Chicago, Ill.

UNIVERSITY OF APPLIED SCIENCE
Dept. 13-69, 1920 Sunnyside Ave., Chicago, Ill.

Gentlemen—Without any obligation whatever, send me your new, fully illustrated, FREE book on Finger Prints and your offer of a course in Secret Service Intelligence and a Professional Finger Print Outfit.

Name

Address

Age

HAVE YOU AN INVENTION?

If so the WORLD PROGRESS will send you upon request sample copy Free containing Suggestions to Inventors as to Inventions Needed. We invite manufacturers to address us regarding inventions they want. Subscription for one year 60 cents. WORLD PROGRESS PUB. CO., INC. Room 202 Victor Bldg. Washington, D. C.

STUDY AT HOME

Directed by The University of Chicago Courses in English, History, Chemistry, Business, Mathematics, Education, Psychology, and 35 other subjects command credit toward a Bachelor degree. Begin any time. Address 25 Ellis Hall, University of Chicago, Chicago, Ill.

YOU CAN OIL PAINT

Amazing new method teaches men or women to earn after first lesson. OIL PAINT photos at home—portraits, landscapes or art subjects. Many earn \$18 to \$100 and more a week. OIL PAINT OUTFIT GIVEN at No EXTRA COST. Graduates furnished employment. Send now for free illustrated book.

PICTORIAL ART STUDIOS, INC. Dept. AP, 2731 No. Clark Street, Chicago, Ill.