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1911
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The Vacation Guide

25 CENTS
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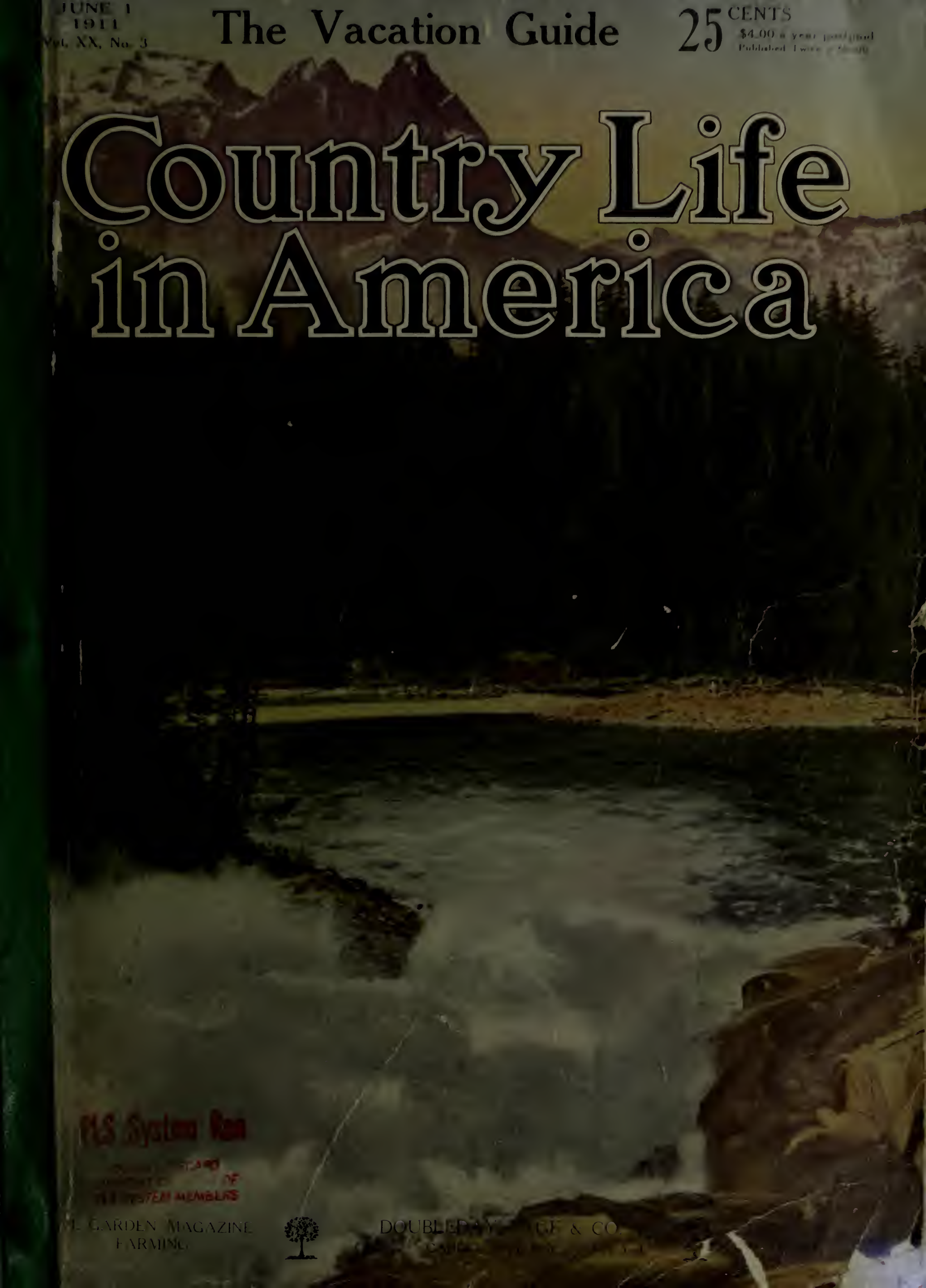
Country Life in America



GARDEN MAGAZINE
FARMING

DOUBLEDAY, PAGE & CO.

What Moon's Trees have done here they can do for you

We have some hardy Tree or Plant for every place and purpose

If you have a lawn you will be interested in our catalog that describes these. *Send for it NOW.*

Philadelphia Office
21 S. Twelfth Street

The Wm. H. Moon Company

Morris Heights
MORRISVILLE, PA.

IT would cost at least five hundred dollars to plant the grounds shown in the picture at the left with trees large enough to give the shade and beauty afforded by those seen in the engraving to the right —according to a leading "big tree" nurseryman of this country who knows and sells trees.

Trees have a known money value, therefore, and it increases year by year.

TWO estates near an eastern city were placed on the market not long ago. They were equally well located and the improvements were of the same type. One place had on it between two and three hundred fine old trees, however, while the other was comparatively bare except of small trees recently planted.

The estate with the large trees sold for $25,000 more than the other.

JOHN DAVEY worked out the science of tree surgery. It is taught only in the Davey Institute of Tree Surgery. Only the trained men of this company practice it properly, and with the backing of an organization which guarantees the quality of the work and protects the public against imposition.

It is false economy to let trees die; real economy to save them.

WHEN a grove of fine trees is allowed to fall into decay and the trees die, there is an enormous cash loss to the owner. The modern science of tree surgery renders it unnecessary for such losses to be incurred. The services of expert tree surgeons cost but a trifle of what their work will save the owners of trees.

Davey tree experts are now at work from the Missouri River Eastward.

Write us how many trees you have, what kinds and where located

THE DAVEY TREE EXPERT CO., INC., 146 ELM STREET, KENT, OHIO
(Operating the Davey Institute of Tree Surgery)

THE COUNTRY HOUSE

IN helping our subscribers find country homes, we shall expand "THE READERS' SERVICE" to include realty developments. We do this largely because so many of our readers have asked our opinion about various real estate developments in and around New York City.

We shall, of course, continue to meet the demand for information concerning farms and estates everywhere, and COUNTRY LIFE IN AMERICA'S READERS' SERVICE will supply to all who ask first-hand facts; there is no charge for this service and it is rendered promptly.

Manager Real Estate Dept., Country Life in America · 11-13 West 32d Street, New York City

NEW YORK | NEW YORK | NEW YORK

THIS beautiful Island of 275 Acres lying in the historic waters of Lake Champlain is to be sold. It would be difficult to find a more charming location for a summer home and profitable farm. Schuyler Island lies one-half mile from the New York shore. When one sets foot on its fertile fields he commands unsurpassed views of the broad expanse of water, the loftiest peaks of the Adirondacks, and rising above the eastern shore of the lake, the famous Green Mountains of Vermont.

A Little Kingdom of Your Own

To the out-of-door enthusiast it offers unusual attractions, broad fields; virgin forests; rocky crags; hunting, fishing, bathing, boating, good harbor. An ideal spot for a **Gentleman's Estate, Club, Summer Home or Resort.**

For further information address

JOHN R. DEAN **New Britain, Conn.**

The country is beautiful the whole year round up in the Westchester hills—and there is fast electric train service, with always a seat for *you*, to the

SCARSDALE ESTATES

The three distinct developments comprising the Estates—Greenacres, Murray Hill, and Scarsdale Hill—offer great diversity of choice both as to location and price.

Write today for Booklet "G."

THE SCARSDALE ESTATES

ROBERT E. FARLEY, President

White Plains, New York 527 Fifth Ave., New York

SAGAMORE BRONXVILLE

Adjoining Lawrence Park.

Just north of Hotel Gramatan.

Sagamore comprises 52 acres of picturesque woodland, charmingly laid out in serpentiue roads, perfectly macadamized, and with fine sidewalks. An ideal site for the home of a motorist; 50 minutes by motor to the theatre. First-class public garage. Beautiful Westchester County affords unequalled opportunity for interesting runs in all directions. Every modern improvement. All beneficial restrictions. Electric train service. 28 minutes to Grand Central Station.

Ten additional handsome residences, costing from $12,000 to $25,000 each, exclusive of land, soon to be completed. Address

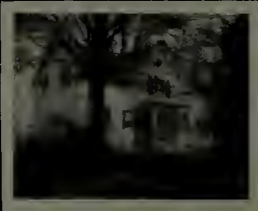
SAGAMORE DEVELOPMENT CO.

Bronxville **Tel. 387 Bronxville**

or

FISH & MARVIN, *Agents*

527 FIFTH AVENUE **NEW YORK**



A Little Village Farm

16 acres unexcelled fruit land, fronting Main Street of Kinderhook. Good 10-room house, good barn and outbuildings. Fine trees about house, good lawn.

Kinderhook is one of the oldest and most charming villages in the State of New York, in a very beautiful country with electric service hourly to Albany. Send for booklet about Kinderhook.

Rural Life Co., Sole Agents, Kinderhook, N. Y.

SHORE FRONT AT RYE

FOR SALE—Exceptional opportunity is offered to secure about 5 acres, with several hundred feet on water, beautiful views, gently undulating land; adjacent to a number of fine estates. Price and full particulars of COUNTRY DEPARTMENT.

PEASE & ELLIMAN

340 Madison Avenue, **New York City**

VIEW OF COTTAGE LOOKING DOWN LAKE

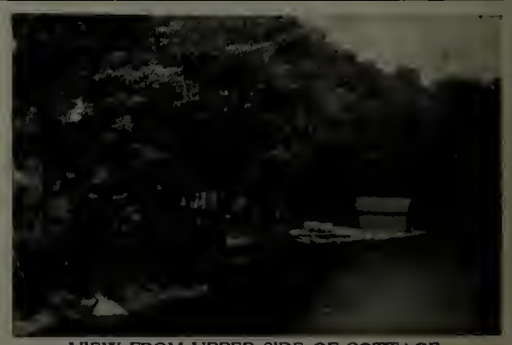
Greenwood Lake, N. Y.

SALE or RENT

About 120 foot lake frontage with a 3-story and attic cottage situated on the west shore of Greenwood Lake, about 500 ft. from Ferncliff Hotel, Greenwood Lake, New York. Completely furnished throughout including a Fischer piano. Contains large reception hall, parlor, dining-room, nine bedrooms on second floor and five on third floor. Two large pantries and large kitchen, also such outbuildings as laundry, wood, coal, engine, pump and boat houses. Size of lot 119 x 500. Rent $600 per season. Price $15,000. Terms to suit.

Phone, Write or See

A. N. GITTERMAN, Phone Cortlandt 300 **Singer Building, N. Y.**



VIEW FROM UPPER SIDE OF COTTAGE

NEW YORK | NEW YORK | NEW YORK

The Life Worth Living

AT

GARDEN CITY ESTATES

Nassau Boulevard Station

PUBLISHED *Here* MONTHLY GARDEN CITY ESTATES, LONG ISLAND, AND 334 5th AVE., NEW YORK JUNE 1, 1911

Little Gardens

A little garden is a joy, but a great garden is often a downright dissipation. You, who have become inoculated with the gardening germ, have you ever been tempted beyond your strength by a sight of a great garden of box-bordered paths fountains, terraces, blooms by the thousand and shrubs by the hundred? Tempted to turn your modest, charming, joyful little garden into an estate and instead of enjoying the pleasure of growing things yourself become a boss gardener — merely directing the work of others. This is garden dissipation and ends up with nothing more profitable than a dissatisfied stale feeling.

A proper environment has a good deal to do, after all, with the pleasures of one's own garden. For, if little gardens surround — a little garden contents. A pride in showing the first crocus, or the first sweet peas is fine, nay, even righteous. But mere size is no justification for garden pride. If you should happen to go to Garden City Estates you would find it the land of little gardens. There is hardly a half acre garden in the place, so the rivalry is one of priority and perfection only.

Bordering the smooth roads, double lined with trees, are many little gardens blossoming now and destined to bloom more gloriously every day. The very soil of Garden City Estates was apparently prepared for little gardens, rich sandy loam on top with perfect drainage below —warm and fertile, it fairly forces the plants to bloom and fructify.

You will find life worth living in the land of little gardens. You are invited to sample the soil, peep into the gardens and dream a little about the house that you like set in the midst of an old-fashioned garden.

New Headquarters for Aviation

Right adjacent to the Merillon Station, on the main line of the Long Island Railroad, and within a short distance of Nassau Boulevard Station on the Hempstead branch, is the pretentious aerodrome of the recently organized Aero Club of New York. This organization, of which Timothy L. Woodruff is President, starts 100 strong in charter membership. Its purpose is to promote aviation under the most ideal conditions obtainable.

The field is a level tract of land two and one half miles long and a mile wide. It is laid out on the latest and most approved lines now adopted in France. Aside from providing for the club's own fliers, and the Nassau Aviation School, the field is to be used as the official testing ground of the United States Aeronautical Reserves.

The Club House

Nassau Boulevard Station at Garden City Estates

Earle L. Ovington, lieutenant, U. S. A. R., made the christening flight April 29th, in his 70 horse power Gnome driven Blériot. The course took him from Belmont Park over Jamaica and part of Brooklyn, thence to Hempstead, and back to his own hangar door at Garden City Estates. The flight was very spectacular, the mean height being several thousand feet. Mr. Ovington was presented with a bronze Trophy, four feet high, symbolical of victory, by Timothy L. Woodruff in behalf of the Aero Club of New York.

The aviators who are now occupying the ten hangars are: Earle L. Ovington, Charles K. Hamilton, Harry S. Harkness, Clifford B. Harmon, Captain Thomas S. Baldwin, Glenn H. Curtis, Fred P. Shneider, Ladis Lewkowicz, George Russell and George Schultz. Earle L. Ovington is the chief instructor for the Nassau Aviation School.

The officers of the club are Timothy L. Woodruff, President; Clifford B. Harmon, Vice-President; Hudson Maxim, Second Vice-President; Capt. Thos. S. Baldwin, 3rd Vice-President, and Richard R. Sinclair, Secretary and Treasurer.

No admission will be charged at the aerodrome. Flights will be going on every favorable day, and exhibition aviation will be a feature on Saturday afternoons. You are cordially invited to come over at any time. Space for parking automobiles has been laid out on the grounds.

Book Notes

To anyone who is thinking of building a house—and who is not looking forward to this pleasure—a book showing pictures of attractive homes is of great interest and inspiration. *The Book of Houses* shows many homes of unusually attractive design—it is made up of pictures mostly, though some mighty interesting text is included. The editor of this page has a supply of them. Send for one; no charge.

The Club House

Frankly, the clubhouse idea at Garden City Estates is distinctive. Every resident belongs. It is where we all get together. You ought to sit in one of our informal talks to fully appreciate what it means to join hands in good fellowship on local undertakings. When you come over, the freedom of the clubhouse is yours, its parlors, reading room, café, and comprehensive facilities for impromptu entertainment, indoors and out. It is very pleasant to sit in the cool café, three sides of which are glass, and enjoy the reaches of irreproachable landscape gardening all around. The service and cuisine are of very high order.

The private offices of the President, Timothy L. Woodruff, and the Resident Manager of the Properties, J. M. Callanan are located in the Club House.

Tennis

After all is said what can beat a good game of tennis on perfect courts.

In the summer when the days are long a set or two before dinner in the cool evening air clears away the worries of a busy day in town, to say nothing of the ravenous appetite it gives you for your evening meal.

The Garden City Estates courts are the meeting place for all the tennis enthusiasts from round about, and no matter what sort of a game you play, you can always find some one at the club whom you can beat, and unless you are a "top notcher," some one who can beat you.

Personals and Local Items

Mr. Oswald Hering, the prominent New York architect is building a tapestry brick Elizabethan house on Stewart Avenue. A feature very unique and the first of its kind is the tapestry tile roof, the material being Mr. Hering's invention. The house is designed for the architect's own occupancy, and will soon be ready.

The only fencing used around the Garden City Estates is California privet. We take it from our own nursery.

Among the young women numbered as residents are the grand niece of General Robert E. Lee, and the grand daughter of General Ulysses S. Grant.

Have you seen those semi-detached English dwellings over at Garden City Estates North? If not, it would be well worth while to motor over with us. There, other new development is going on too — the kind within reach. Come over and go the rounds as our guests.

Some of these houses in *The Book of Houses*—free for the asking

Garden City Estates—the place of little gardens. Send for information and book of houses. A visit to this old cathedral town is worth while Word sent to the offices at Fifth Ave. and 33rd Street will bring prompt information of every sort.

NEW YORK

NEW YORK

NEW YORK

FOR SALE OR RENT
OSGOOD LAKE—ADIRONDACKS St. Regis Chain

Camp property comprising about 30 acres with shore frontage of 1240 ft. Beautifully wooded. Camp is of Swiss Chalet Architecture, consists of about 15 cabins of exceptionally substantial construction. 2 baths (sanitary plumbing). Running water in kitchen, pantry and laundry. Fire places. Boat-house, boats, and launch. Garage and stable. Tents. Very attractively and fully furnished. Electric lights and pump. Telephone. Excellent water supply. Ice and wood supplied. Garden. Two miles from Paul Smith's Hotel, railroad and postoffice. Apply to

DURYEE & CO., REAL ESTATE, SARANAC LAKE, NEW YORK

ADIRONDACK CAMP FOR SALE OR RENT

BLUE MOUNTAIN LAKE, N. Y. Camp proper 11 rooms and 4 room kitchen annex; modern plumbing, boat house, dock, launch house, ice house, laundry, barn, stable, lodge, open camp, vegetable garden, unequalled location, magnificent views, mountain brook at side of camp.

Robert E. Long, 405 Betz Building, Philadelphia

IN THE ADIRONDACKS — For Sale or Rent

Summer camp of the late Seth E. Thomas on Upper Chateaugay Lake, consisting of a large house, boat house and annex. The main house has a living room, dining room, kitchen, etc., and seven (7) bedrooms. The annex, for servants or bachelor quarters, has five (5) bedrooms and lounging room. Boat house, boats and launch. Furnished complete. For particulars address **Box 1414, New York**

ADIRONDACKS

Upper Chateaugay Lake, Clinton County, N. Y.
FOR SALE

Beautiful summer camp. Large house with living room, dining room, kitchen, six bed rooms, bath, running hot and cold water, two story boat house with servants' quarters; all completely furnished. Tennis Court, etc. Price reasonable. Address

WM. F. PATTON, Scarritt Bldg., Kansas City, Mo.

ADIRONDACKS

If you want a camp or cottage on any lake in the Adirondacks send for an illustrated booklet.

W. F. ROBERTS REAL ESTATE OFFICE
Saranac Lake New York

ADIRONDACK CAMP FOR SALE—On Lake Clear, two miles from Lake Clear Junction, four miles from Paul Smith's and Saranac. Ten acres of virgin forest, 500-foot frontage on lake. Camp consists of five buildings—master's camp built of pine logs, 20x60, open fireplace, etc., hardwood floors, ceiled with white cedar to gable—dining camp, 20x40, contains open fireplace and kitchen—guests' camp with large living room and fireplace, 2 bedrooms—guides' camp, ice and storehouse. Three years ago this camp cost owner $25,000 for land and buildings, and was occupied only part of second season. Price to-day $12,000. Address Fred W. Post, 219 Post Street, Rochester, N. Y.

Concerning Rental or Purchase of

ADIRONDACK CAMPS

in any section of the mountains, consult

DURYEE & COMPANY
REAL ESTATE SARANAC LAKE, N. Y.

For Sale—Whiteface Inn Property

The most desirable hotel site in the Adirondacks, including about 450 acres on and near the west shore of Lake Placid, with a new high pressure gravity water system for fire and domestic service; a trunk line gravity sewer, and a full equipment of help houses, laundry, barns, boathouses, boats, launches, etc., leaving only to be provided a new hotel building, in place of the Whiteface Inn that was destroyed by fire. The Whiteface Inn had a high-class clientele.

Address Adirondack Company, Room 614, No. 17 Battery Place, New York City.

Brightwaters

BAYSHORE, L. I.

A master development on Great South Bay. An ideal suburban home community amid picturesque surroundings, magnificently improved. Healthful, convenient, accessible. Stores, churches, schools and all essentials. Fullest opportunities to enjoy all the recreative features of land and sea. Houses and plots at moderate prices on suitable terms. DeLuxe booklet M free upon request.

T. B. ACKERSON CO.
New York Offices: 1 West 34th St.

For Sale in the Catskills

Two cozy and neatly furnished 7 and 10 room cottages with barn, stables, and about 120 acres of land, consisting of meadows, pastures, orchards and woodland, with never-failing springs and brook. The cottages are built on a hill, thus affording a most picturesque view. There are fishing and bathing near at hand. Prices very reasonable. Apply to

F. G. STROHMEYER, 139 Franklin St., N. Y.

Beautiful Country Residence
SCARSDALE, N. Y.

Consisting of twelve acres of land, laid out in well-shaded lawns and gardens with a large variety of shrubs and fruit trees.

The roomy, comfortable house contains sixteen rooms and two baths, with a piazza on three sides. It is fitted with steam heat and has double floors. Excellent taste is shown in the interior finish and decoration throughout.

Main stable has four stalls and there is also a separate garage accommodating three machines.

A gardener's cottage of eight rooms and bath.

Send for Circular "A" describing other attractive homes.

ANGELL & CO., 16 East 42d St., N. Y.
Branch Office, Scarsdale, N. Y.

Birdseye view of

Wampage-Shores
L. I.

We are now ready to take you out for a personal inspection of this magnificently located and perfectly developed property, 35 minutes from New York.

Wampage Shores offers one mile of actual frontage, with beautiful white sand beach, directly on the water of Manhasset Bay without road or reservation in front.

There is no other shore property or development of equal quality and refinement near New York.

¼ Acre plots or more. Easy terms.
Let us send you photographs!

S. Osgood Tell & Co.
542 Fifth Avenue, New York.
Send for booklet C.

"Edgemont Estate" At Scarsdale Station

The ideal realization of **out-of-town** living. A delightful **home community** for all-year residence. Protected social environment, the charm of the country, all city improvements. Immediately at station, only 19 miles, on Harlem Elec. Div., N. Y. Cent. R. R.

Ask for Booklet C.

Scarsdale Company, Owners
J. Warren Thayer, Pres.

Scarsdale, N. Y. Westchester Co.
505 5th Ave., N. Y. Corner 42d Street

THE LODGE AND MAIN ENTRANCE, JAMAICA ESTATES.

LETTERS FROM A Contented Country Crank TO HIS FATHER

Jamaica Estates, L. I., N. Y., June 1, 1911.

DEAR DAD:

I have just settled down "for keeps" with woodland, dales and hills all around me. I'm not in the Adirondacks nor the Ozarks, but you would almost think so. Remember that foothill region of the Green Mountains where we brought down a buck last fall? This place is identically like it.

I am enclosing a few snapshots. Would you believe that right here one is no farther from the Waldorf-Astoria than City Hall is from Columbia University? Just a little way from where you note my car, in one photo, I can time my watch with the clock in the Metropolitan Building. And ordinary field glasses are all I need. Do you know, looking at that three story dial, one is sure to think of the huge, hustling, noisy city beneath, and it seems like conjuring up a fancy, a dim remembrance of a visit? It strikes me that way, and I commute every day.

On another hilltop, you are surprised by the broad expanse of an arm of the blue Atlantic. A wide sweep of country side intervenes, dotted here and there with villages and church steeples.

This is certainly the place to live.

It came very near being a public park for the city a few years ago, but luckily for those of us who appreciate "Out On The Land" living, the property was acquired by prominent capitalists.

Here and there one sees through the branches wide Colonial verandas, or Gothic gables, or Gambrel roofs where some of the best examples of modern architecture in country residences have grown already. But most of the land lies as virgin as it was a century ago. Of course roads and boulevards have been cut through and macadamized. Cement side walks have been laid and when I first came here I was delighted to find the company had looked after such city conveniences as gas and water mains, permanent sewers, etc. All I had to do was to connect. You can readily see what a real advantage this is when one is accustomed to living in the city.

It is very easy to get here and to get away. Trains from Brooklyn, Long Island City and Pennsylvania Station all center at Jamaica. Jamaica Estates has a station all its own, called Hillside, a short distance from the lodge.

We are actually in Greater New York here, and so we enjoy the privileges of the Metropolitan public schools, police, and fire protection. But the land is taxed only as farm land until building begins.

There are over five hundred acres all told.

Why don't you negotiate for a slice of Old Earth, right next to mine? You can have a hill all of your own. Such men as Judge Morgan J. O'Brien, M. J. Degnon, Dr. J. Wilbur Chapman, Dr. P. E. Zartman, and many others of eminence have permanent homes here now.

If you can't shape things so as to join me and build at once, at least pick out and purchase one of the large wooded plots near mine. You'll be saving big money by doing that as property values in this place are going to double within a short time.

Come and look it over, anyway, Dad! I am called away for a few weeks on that Mexican ranch matter you know about, but Timothy L. Woodruff, whom you know, is the President of Jamaica Estates and will be glad to see that you receive a mighty pretty book with views better than I enclose. There are lots of pictures of houses finished and occupied. He will arrange also to take you down. It is only 18 minutes on the train. It needn't take you away from the office more than two hours. Just write to Timothy L. Woodruff, President, Jamaica Estates, 334 Fifth Ave., New York.

Yours for "Life in the Open,"

BOB.

NEW YORK

ADIRONDACKS
LOWER SARANAC LAKE

FOR RENT—Camps Bedford and George. Exceptionally beautiful location—1 camp has 5 masters' bed rooms, 2 baths, 3 servants' bed rooms, bath; Other has 5 masters' bed rooms, 2 baths, 4 servants' bed rooms, bath. 1 has furnace. Both have electric lights. Both are unusually attractively furnished. Tents, Boats, Launches, Garage, Telephone. Pure water. Golf and Tennis nearby. Apply to

Duryee & Co. Real Estate **Saranac Lake, N. Y.**

Paul H. Irvin & Maynard C. Perkins
Long Island Real Estate Investments
Main Line Specialists
Suite 287, Metropolitan Tower
Tel. 4301 Gram., New York City

MONEY MAKING FARM FOR SALE

Fifty acres, 30 miles from New York. Is paying 20% on $12,000, the price. April income over $400. Good Buildings and plenty of them. Trout stream; pond. A rare opportunity to get a delightful country home.

Also some magnificent building sites
at from $300 to $500 per acre. Short walk from town.
HOWARD KEELER, Owner, Spring Valley, New York

NORTH SHORE, LONG ISLAND

We are the largest owners of actual shore front on the North Shore of Long Island. You can buy anything from

ONE ACRE TO ONE THOUSAND ACRES IN A SINGLE ESTATE.

Prices, from $250 per acre up.

Modest bungalows, more pretentious cottages, large or small estates.

FURNISHED COTTAGES TO RENT

Club privileges, Golf, Tennis, etc. Every attraction of the country.

DEAN ALVORD COMPANY, 113 Broadway, N.Y. Phone 3195 Rector

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ALONG THE SOUND
REAL ESTATE
Furnished Houses
WM. F. DAY
500 Fifth Ave., N. Y.

South Shore of Long Island

Choice Dwellings to Rent
Residence Properties, Farms
and Acreage for Sale

Tel. 22. JEREMIAH ROBBINS, Babylon, L. I.

COUNTRY PROPERTY

Farms; country seats; water fronts; islands; game preserves; timber land; mountain land; summer homes; bungalows.

Archibald C. Foss, No. 39 E. 42nd St., N. Y. C.
Branch Office, Millerton, N. Y. Branch Office, Port Chester, N. Y.

LAKE GEORGE, NEW YORK

TO LET: "Lochlea", a large, new, completely furnished residence on Lake George with 8 acres and 500 feet Lake front; one mile from R. R. station; twelve bedrooms, main hall 60x10½, drawing-room 30x18, dining 24x18, reception 13x18, library 14½x18, billiard 34x16, ten open fireplaces, five bath rooms, electric light, vapor heating. Garage. For pamphlet, pictures, terms, etc., apply to P. C. Savage, office of Shepard, Smith & Harkness, 128 Broadway, New York City.

CONNECTICUT

"OWENOKE"—SAUGATUCK, CONN.

A restricted development of moderate priced cottages fronting directly on Long Island Sound. Water, electric lights, telephone. Trolley passes property. Within commuting distance of N. Y. City (New Haven R. R.) A few small plots for sale at very attractive figures.

W. A. PECK, Saugatuck, Conn., or 200 Broadway, N. Y.

NEW YORK

Valuable Retail and Wholesale Greenhouse Property For Sale at Greenport, L. I.

A moneymaker for a hustling, practical florist. On choice land, acre and a half, situated a block from Eastern Terminal Penna. R. R. Six greenhouses, store, 17-room residence with all improvements, concrete liquid fertilizer plant piped to every greenhouse. The ideal carnation soil and country here—best carnations in world grown here. Opposite Shelter Island. Price and further particulars upon application.

I. M. RAYNER, Greenport, L. I., N. Y.

Adirondacks
FOR SALE

A very beautiful estate in the Adirondacks, consisting of about 5,000 acres, woods and water, developed with trails and roads and adequate buildings. Many miles of shore frontage. Deer and trout in abundance. Adapted to private ownership or club purposes. For particulars apply to

DURYEE & CO., Real Estate, Saranac Lake, N. Y.

Moderate Price Country Home

15 acres, near the beautiful village of Greenwich, Washington County, N.Y. Alongside electric railway. Nine-room modern house, electric lights, water supply, heater, bath. Large poultry house, small barn. Fourteen choice building lots. Medium price houses can be built and rented every month in year. A grand place to invest a few thousand and have an income sufficient for all needs, and know where your money is, and that it is safe and paying big returns. Price $3,500. Box 35, Middle Falls, N. Y.

FOR RENT ON
Upper Saranac Lake
IN THE ADIRONDACKS

A camp completely and attractively furnished, comprising a number of buildings and containing over twenty rooms, three baths, open fireplaces. Boat house, boats and launch. Beautiful lake and mountain views. For further information apply to

FISH & MARVIN, 527 Fifth Avenue, New York

SARATOGA SPRINGS

New York State
Mineral Springs Reservation

Leading Health and Pleasure Resort

For Illustrated Booklet and Information about Furnished Cottages and all Real Estate write

LESTER BROTHERS, Real Estate Brokers

CONNECTICUT

CHARMING VILLAGE HOME

25 Acres
$4,000
Part Cash

In the Beautiful Litchfield Hills

This is one of the most attractive homes in Western Connecticut; ideal location, among good neighbors and only 10 minutes' walk to a delightful village with churches, school, library and all conveniences; land is productive and well divided into tillage and pasture; fine, 2-story, 14-room house, with piazza, furnace heat, supplied with running water; deep, maple shade, beautiful lawn; for more complete details of this splendid farm home and many others in the hills, near lakes and rivers or along the seashore, see page 35, "Strout's Farm Catalogue No. 34," the biggest and best farm catalogue ever issued, copy free. Station 2717, E. A Strout, 47 W. 34th St., New York.

New Canaan, Conn.

A Gentleman's Place Complete, to lease for a term of years, or by the year, a good 16 room house, with all modern improvements, also man's house, with barns and other outbuildings to make place complete, 45 acres of land, situate on Oenoke Avenue, one of the finest streets in town; 1½ miles from station.

Also, a 12 room house located about 3 miles from Station with barn and other outbuildings to make place complete for a gentleman's home, with 16 acres of land, all modern improvements.

Also a number of furnished houses for the summer months.

For further particulars apply to

Francis E. Green
REAL ESTATE, NEW CANAAN, CONN.

NEW JERSEY | NEW JERSEY | NEW JERSEY

Homes at Short Hills

New Jersey's Most Exclusive Residence Section

Our "BRANTWOOD" property is the choice of New York's most discriminating business men. Entire neighborhood carefully restricted. Forty minutes from downtown New York, express trains; two to fifteen minutes from station. Fully improved; pure water, sewers, electric light, gas, sidewalks, macadamized roadways, etc.

Lots planted ready for building, with fine old shade trees and unrivaled opportunities for working out fine landscape and garden effects. Write for information, or we will meet you at the property on request.

Roche, Craig & Wiley

Suite 1302, 165 Broadway, New York. Tel. 1546 Cortlandt

Near BALTUSROL GOLF CLUB and CANOE BROOK COUNTRY CLUB. Golf, motoring, driving. Invigorating mountain air, broad outlook, all advantages of refined country living with all convenience of city life. Property under development over five years, with more than fifty fine homes occupied or building.

Several unusually artistic houses (completed or nearing completion) for sale; built by us under the direction of skilled architects of national reputation, and specially designed for exposure, outlook and landscape effect.

CONNECTICUT

Greenwich, Conn.

7 Acres: Beautiful grounds and trees. Residence with 6 masters' bedrooms, 4 servants' rooms and 4 bathrooms.

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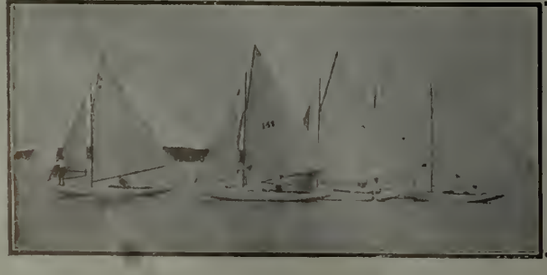

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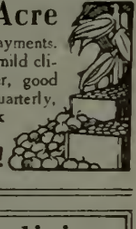

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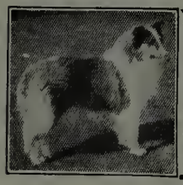

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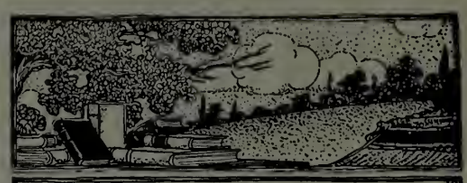

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The New Building Estimator. William Arthur. David Williams Co., New York. 477 pages; price $2.50.

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The Metropolitan Automobile Guide. Compiled by Henry McNair. The Automobile Blue Book Pub. Co., New York. 448 pages; price $2.50.

Every tourable route within 150 miles of New York City is described and illustrated in the same manner that other sections have been covered by the four preceding volumes of this set. It is especially desirable for those who wish to make trips of one or two days only, going one way and coming another. The maps are especially good and the directions explicit.

Porcelain and How to Collect It. By Edward Dillon. E. P. Dutton Co., New York. Illustrated; index; 314 pages; price $2.

Old porcelain and its identification is a subject not to be dismissed in a brief discussion, and Mr. Dillon has succeeded remarkably well in keeping it down to 300 pages, particularly as he has attempted to treat adequately all three of the main divisions of his subject — Oriental, Continental, and British porcelains. The technical and historical sides of the subject are much condensed, and the collector will find useful information here in a fairly convenient form.

The Adventures of Two Ants. By Nanny Hammerstrom, translated from the Swedish by A. E. B. Fries. Frederick A. Stokes Co., New York. Illustrated; 79 pages; price $1 postpaid.

One of the most charming pieces of nature-writing for children is this simple, absorbing story of the doings of ants. The facts may be found in a scientific manual. But to hear a young, inexperienced ant tell of the doings in the chambered ant hill, and of all the things the patient nurse ant taught her young charge to do — that is to feel the thrill of a new fairy tale. Hans Andersen has no more eager hearers than little children who listen to this one. The translator deserves a share of the credit for this book. He (or she) is also probably to blame for confusing the meaning of the words "pupa" and "cocoon."

School Department

In this department are printed announcements of high-grade schools. Information regarding schools will be gladly furnished to readers upon request. For school rates address SCHOOL DEPARTMENT, COUNTRY LIFE IN AMERICA, 11-13 West 32nd Street, New York.

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MOUNTAIN CLIMBING FOR WOMEN

DURING the summer and autumn, one's thoughts are apt to turn toward the campfire and the mountain. I have seen and heard so many women protest against this form of outing, claiming it too dangerous for women and girls, that I feel inclined to "say my say."

Naturally, no one, either man or woman, who has a really weak heart, should attempt climbing, but for the person even in but moderate health, a tramp taken leisurely, with a little climbing, is delightful. There may be parties or if one knows the country and is not easily frightened a solitary jaunt can be greatly enjoyed.

Trousers are safer and more comfortable

Any woman is far safer in trousers for this trip than skirts or even bloomers. Mine are the regulation riding trousers, with canvas leggings, flannel shirt and Mexican sombrero. This hat is light and it protects one from the sun, and sheds water splendidly. My shoes have medium-weight soles as a very heavy sole tires the feet and renders one less surefooted.

I carry a canteen filled with water and a little ice. The canvas bag is not heavy and holds a surprising number of things. In my pocket I carry a knife having a safety shield at the point so that if I should fall I would not be cut. Buckskin gauntlets are the ideal gloves, being soft and pliable, and not too warm. My cane is from Mexico. Coffee wood though it is, it is stout and light.

As to rations, these are necessarily governed by the length of time one is to be gone. But take a lesson from the army and carry only what is absolutely needful. Some bar chocolate, good crackers and nuts (shelled) and some coffee, strained and ready to be heated, is plenty for a one day's outing. For a two or three days trip, take sliced bacon, coffee, crackers, buttered whole wheat bread, and cookies; a small frying pan and granite cup are about all that will be needed. Carry with you plenty of matches in a moisture-proof case. I take a "poncho," as then I can defy rains with impunity; it serves as a shelter tent if needed, and I can roll myself in it and lie down for a snooze, safe from bugs and crawly things.

A poncho is an excellent thing to take along

Unless one is stout-hearted and a good shot she should not go up into heavily wooded mountains alone, as it is neither safe nor pleasant. If you ever do go where there is the slightest danger of wild animals, take this hint from the Indian, and learn to imitate a rattlesnake's hiss. Don't make a weak little noise—hiss until you really believe it yourself. By doing this you avoid much danger — as no wild animal relishes the presence of a rattlesnake. Should you run into his snakeship, stop short, and fix him with your eye, while you do some quick thinking as to which way to go — then go.

If you keep your presence of mind, there are not many real dangers. But you must dress for the occasion, being safely as well as comfortably clad, and such a trip will wipe the cobwebs from your brain, clear your heart and mind and make life once more really worth the living.

E. C. L.

THE TALK OF THE OFFICE

"To business that we love we rise betime
And go to 't with delight."—*Antony and Cleopatra*

SPRING IN GARDEN CITY

For the first time we feel ready to receive visitors, with comparatively few things to apologize for. It took a short time to erect the building for the Country Life Press, but it has taken a long time to get all the new machinery necessary for the complete operation of all the departments. The last to be put in order is the color department for photo-engraving, so that we now make our own plates for colored covers and illustrations. The very latest machine is the binder which is being installed to put a magazine together, so that the *World's Work* will be open flat instead of being wired with rigid staples, which permit of only half opening it.

An early fall and a late spring have held up much of the planting out of doors, but much of the work was done in April, after five months of outdoor inactivity, and by the time these lines get into print we hope everything will be green and attractive.

At all events, such as the place is, our friends and neighbors will be made welcome.

Please note that the telegraph station in our building is the Western Union. *Do not use the Postal Telegraph* to Garden City — it means delay.

The Garden and Farm Almanac has been entirely sold out and no copies can be supplied until the 1912 Almanac is ready next December.

The Sweet Pea Society has an exhibition on our grounds in June — 150 varieties of bloom.

The American Booksellers' Association held its convention in New York and a train load visited us at Garden City on May 9th, greatly to our pleasure.

April saw more than 8,000 trees, shrubs, and flowers planted on our grounds.

NEW YORK OFFICE MOVED

Which reminds us that we have rented our old building, 133, 137 East Sixteenth Street, to the Irving Place Realty Company, who are sub-leasing it to several tenants; and you will find our Advertising Department in new quarters at 11 West 32nd Street, an office building in the centre of things and only five minutes' walk from the Pennsylvania Station, at Thirty-third Street and Seventh Avenue.

GARDEN CITY NOTES

The following trains stop at our Country Life Press station:

FROM NEW YORK	ARRIVE C. L. PRESS
7.12 A. M.	7.54 A. M.
7.56 A. M.	8.35 A. M.
11.00 A. M.	11.35 A. M.

Other trains from New York arrive in Garden City three blocks from Press —

OTHER TRAINS FROM NEW YORK	ARRIVE GARDEN CITY
9.32 A. M.	10.11 A. M.
2.00 P. M.	2.42 P. M.
3.02 P. M.	3.41 P. M.
3.36 P. M.	4.21 P. M.

PENNSYLVANIA BOOK SHOP

From the very first our little bookstore has done well, and seems to serve a useful purpose to the public. We have engaged and put in charge of the shop Mr. Bradford Scudder, a trained bookman and formerly a librarian, so that our customers will find in him an expert in all that they may wish to know about new books. The shop is in the concourse of the new station. It is not large, but most people have not found fault with that, as it carries a good stock of the books of all publishers.

BOOKS FOR THIS TIME OF YEAR

Here is a list of books for people who want to enjoy the country in June. They may be had of any bookseller, or will be sent on approval by Doubleday, Page & Co., Garden City, L. I., N. Y. No descriptions or adjectives are attempted, because you can see them at your bookseller's, or we will take the risk of mailing copies.

Neltje Blanchan

THE AMERICAN FLOWER GARDEN. Illustrated. Size, 8 x 12. Boxed, net, $5.

HOW TO ATTRACT THE BIRDS. Illustrated. Size, $6\frac{1}{2}$ x $8\frac{3}{4}$; net, $1.35.

NATURE'S GARDEN. Illustrated. Size, $7\frac{3}{4}$ x $10\frac{3}{8}$; net, $3.

BIRDS THAT HUNT AND ARE HUNTED. Illustrated. Size, $7\frac{3}{4}$ x $10\frac{3}{8}$; $2.

BIRD NEIGHBORS. Illustrated. Size, $7\frac{3}{4}$ x $10\frac{3}{8}$; $2.

Charles K. and Chester A. Reed

GUIDE TO TAXIDERMY. Illustrated, net, $1.50.

Chester A. Reed, B. S.

NORTH AMERICAN BIRDS' EGGS. Six hundred and sixty half-tone illustrations and two hundred and seventy-five pen-and-ink sketches. Size, $6\frac{1}{4}$ x 9, net, $2.50.

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BIRD GUIDE. In two parts. Pocket size — illustrations.

Part I. WATER AND GAME BIRDS: BIRDS OF PREY. Size, $3\frac{1}{4}$ x $5\frac{3}{4}$. Flexible sock cloth. Illustrated, net, $1; Flexible leather, net, $1.25.

Part II. LAND BIRDS EAST OF THE ROCKIES: FROM PARROTS TO BLUE BIRDS. Size, $3\frac{1}{4}$ x $5\frac{3}{4}$. Flexible sock cloth. Illustrated, net, 75c.; Flexible leather, net, $1.

Parts I. and II. Bound in a single volume. Size, $3\frac{1}{4}$ x $5\frac{3}{4}$. Illustrated. Flexible leather, net, $2.25.

WILD FLOWERS EAST OF THE ROCKIES. Size, $4\frac{1}{2}$ x $6\frac{1}{4}$. Illustrated, net, $2.50.

FLOWER GUIDE: WILD FLOWERS EAST OF THE ROCKIES. Size, $5\frac{1}{2}$ x $3\frac{1}{4}$. Illustrated. Cloth, net, 75c.; Leather, net, $1.

The Library of Country Life in America

This series is an outgrowth of the success of our magazine — "Country Life in America." Though each volume is complete and quite independent of any other, these books are closely connected in their strong appeal to every man or woman with outdoor interests.

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HOW TO MAKE A FLOWER GARDEN. More than two hundred beautiful photographs. Size, 8 x $10\frac{1}{2}$. Cloth. Postpaid, $1.80; net, $1.60.

HOW TO MAKE A VEGETABLE GARDEN. By Edith I. Fullerton. With 250 photographs by H. B. Fullerton. Size, 8 x $10\frac{1}{2}$. Cloth. Postpaid, $2.20; net, $2.

Country Life's Creed

¶ To encourage country living;

¶ To draw people from the crowded cities into the open spaces;

¶ To foster a love of the wide outdoors, the home of health and of broad horizons;

¶ To keep active the love of all things that live and grow — of birds and animals in free and unendangered lives, of great trees that bless us in their growing and in their sacrifice, and of all flowers;

¶ To inspire communion with Nature in all her moods;

¶ To encourage the owning of houses and land, and to foster the love of home;

¶ To teach good taste in architecture and in decoration, and to encourage the building of better homes;

¶ To preach the gospel of the garden, the planting of trees and shrubs and flowers, and the making of better gardens;

¶ To spread the discoveries of the newest agriculture, and to help make farming more effective;

¶ To encourage the breeding of better horses, dogs, cattle, fowls, and all the animals that serve us;

¶ To encourage clean sport and all wholesome outdoor enjoyment and activities;

¶ To help with all practical problems of country living;

¶ To minister to all the needs and enthusiasms and joys of those who live in the country and love it;

¶ This is the sum and substance of our effort.

COUNTRY LIFE IN AMERICA

C.V.B.

Vacation Number

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TO CONTRIBUTORS.—While we are always glad to receive and examine manuscripts and photographs, we cannot hold ourselves responsible for them. All manuscripts which the writers desire returned must be accompanied by sufficient postage.

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These two Indians repeatedly risked their lives in order that Mr. Dimock might make photographs. A few days before this picture was taken a party had swamped in going over the falls nearby and two of them had drowned, but these Indians entrusted their frail craft to the same treacherous waters without a tremor

COUNTRY LIFE IN AMERICA

VOLUME XX—NUMBER 3 June 1, 1911 PRICE, 25 CENTS
$4 A YEAR POSTPAID

"This, also, was motor-boating, but another sort. It was a painful incident in our attainment of a very great privilege"

THE JOY OF MOTOR-BOATING

By ALBERT HICKMAN

Photographs by A. B. PHELAN, W. B. JACKSON, and others

[EDITORS' NOTE. — *This article is one of a series on "The Joys of Country Life," which we plan to publish from time to time, and which we hope will express the feeling and spirit of some of those activities which we usually treat in a more practical fashion. "The Joy of Edged Tools" and "The Fun of a Greenhouse" appeared in our December mid-month issue; "The Fun of Driving a Motor-Car" in the January mid-month number; "The Joys of Gardening" in our March 1st issue; "The Joy of Angling" in our May 1st issue. Another installment of "The Joy of Motor-Boating," "The Joy of Farming," "The Joy of Home-Building," and others will follow.*]

THE late Sir Alfred Jones, president of Elder, Dempster & Co., was one of the most extraordinary men in the world. First he walked from Wales, the Garden of Eden out of which came all the Joneses, into the Elder, Dempster office in Liverpool, where he stayed, as an office boy. Later he found Elder inconvenient, and he bought him out. Then he found Dempster inconvenient and he bought him out. There were some intermediate processes, of course, but this was pretty much the effect. When I had the good fortune to know him first he was controlling, of one sort or another, 129 steamers at the extreme ends of the earth, and was doing it out of one head without, so far as I could see, the aid of note-books or references of any kind. Besides, he was running the pioneer English banana business; the Hotel Metropole, Grand Canary; a banking business in West Africa; the mail service to the West Indies; a wholesale grocery business in England, and as A. L. Jones, on the West Coast, he was selling coal to Elder, Dempster & Co., as such, and, I trust, making a good thing out of it. And he was fathering the Liverpool School of Tropical Medicine and doing unnumbered other things besides. So when he came to make a speech he showed a great regard for the value of words. For this reason, and because he never opened his lips unless he had something to say, and for one other very special reason, his speeches went, word for word, into every newspaper of importance in the United Kingdom.

I remember one night at a dinner, after the launching of one of his great steamers, when it was evident that he had to speak, he stood up, and in finishing he said: "I don't know that I have anything more to say than this: that with the introduction of this type of steamer, and with things as they are at present, we can now carry a ton

fourteen miles for a penny," and he sat down. This is the extreme refinement of commercial shipping.

Here is something quite as wonderful. If you take a little coffeecup of gasolene, mix it with a hogshead of ordinary atmospheric air, feed the mixture through a brass arrangement into an ornate machine made largely of cast iron, to which you also supply one small electric spark at judicious intervals, you can silently carry a sick man, his wife, two daughters, three guests, an American captain, a Canadian mate, a Scottish engineer, a Swedish deck-hand, a Japanese steward, and a Chinese cook, in palatial surroundings, over 100 yards of the calm and imperishable sea. That is the extreme refinement of motor-boating.

But there is another point of view. There was a time, such a short while ago that the little children in the streets remember the wonderful language it bred, when even a reasonable man might kneel in salt water that floated a peacock-feather-colored film of oil against his white duck trousers, where it stayed, and wrestle through hours with some dreamer's dream cast in iron, till the tears of rage flowed down and mixed with the sweat on his face. This, also, was motor-boating, but another sort. It was a painful incident in our attainment of a very great privilege and, happily, it is past. If you do that sort of thing to-day it is your own luxurious eccentricity, and nobody else is to blame.

"The sombre spectacle of the gentleman with the tears in his eyes and the carbonized grease in his hair, before an unworthy altar"

At the same time the sombre spectacle of the gentleman with the tears in his eyes and the carbonized grease in his hair kneeling before an unworthy altar means one new thing in the history of the world. It means that what is called the sporting fraternity had taken to mechanical engineering as a pastime. They never did that before. They had chased little, hard balls over large, green fields with various-shaped sticks for many hundreds of years. They had batted big, soft balls around little, walled yards with different-shaped scoops for almost as long. They had captured and subdued every kind of beast from the wild ass to the wild elephant, and ridden on their rumps or the backs of their necks, as they saw fit, to prove it. And they had done many other things. But they had never tackled the marine two-cycle internal-combustion motor of the year 1903, and they had one or two things to learn. It was a bloody war, but short. The patient inventor saw also the trouble and bent his head to the task of devising something that could be coaxed by sheer unintelligent kindness. Mercifully, he accomplished this end and allayed the distress. Even the two-cycle engine of to-day, of best sorts, is almost as infallible as the moral law, and the four-cycle is more infallible than steam, which is all we need say about it, because this means that it is the most satisfactory power we have.

The marine engine at once came to bear a special relation to its owner. Motoring on the water is much cheaper than motoring on land, and therefore the marine engine, and especially the little two-cycle engine, could have many more kinds of owners than an automobile engine. It had another advantage over an automobile engine: its owner could sit and make friends with it while it was running and keep a fatherly eye over its cycles, and no man may live under the bonnet of an automobile when she is under weigh. If he did he would probably be very much frightened.

So the marine motor became to the man much as his gun and his horse had been to him in years gone past, and to show how utterly this was the case the man began to lie about the wonderful things the motor could do, just as he had about the gun and the horse, only much worse. Men have always lied about their sports, but probably in the whole history of the world there never was an implement or an adjunct of sport about which men have lied so terribly as about the two-cycle motor. A normally constituted man will fight with his engine all day and lie about it all night, and wholly in its favor, and he will not do that for his wife. There is some sort of mysterious tie.

I went once with a man in his motor-boat on what was ostensibly a duck-shooting expedition. Across three miles of open October water and back, out of every four revolutions of the screw the man did one, and the engine did three. There were times when things were better than this and at other times when they were worse. But this was a reasonable average. We got near only one duck and he hadbeen shot before. He had one wing and one leg broken and he was having some difficulty about keeping his head up. He couldn't fly and he couldn't dive, and he could swim with only one foot. Everything considered, we thought it would not be fair to shoot him, and we decided we would capture him alive or not at all. We did not capture him at all; we couldn't catch him. Yet that man, in the next season, knowing that I had been with him on that trip, told me that in the season before his engine had never stopped once. This is a sheer fact. I have an engine that in nine years' service has never stopped once, of itself, for any reason whatever, but I dislike saying so.

In the wonderful development of the marine gas engine — the whole great industry has grown up within the past ten years — the United States has had a great deal to be proud of. Contrary to usual conditions, it was she that developed the heavy, slow-speed engine, while the Englishmen, under the influence of the automobile motor, were bringing to perfection the light, high-speed racing machine. As in all these evolutions, the development was brought about by two or three brilliant men, and Globe, Standard, Murray, and Tregurtha, and Craig became familiar to the new guild of power boatmen as the standard marine engines of the day. The United States stood practically alone in the development of the cheaper and simpler and less economical two-cycle engines, and it was the earlier examples of these that were responsible for the coining of more vile

phrases than even golf, and the breath of whose reputations still taints the atmosphere that surrounds the sport.

The way it came about was simple. Probably nothing that ever happened appealed more perfectly to the imagination of the man with a thousand dollars a year than the sudden knowledge that it was within his means to cruise out on the high seas on his own quarter-deck, independent of the winds of heaven and with a dozen of his friends in the cockpit. The demand for motors became very great. Every man is to some extent an inventor, and every inventor, in this case, had his ideas moulded, cast, machined (more or less), and assembled, and sold to the public. Such a collection of junk by first intention was never given out to an innocent world. That they would not go, or would go very little, made no difference. The public wanted them and the public was the best judge of what it required. In England they do things differently. They try them out on the factory. But in the United States all new ideas, engineering or other, are tried out on the public, and to the outsider it seems to give the public a sort of lateral motion that is most interesting. We have no doubt that you are climbing up the golden stairs, like ourselves, but from where we are laboring it appears as if you were covering the stairway freely, from balustrade to wall. It would seem to be a longer journey, but perhaps it is easier. You know best.

"There is no organism that conduces so nicely to the pose of 'the millionaire yachtsman' as does the motor-boat"

In any case, it took very good men weeks and months to find out that many of the early two-cycle engines would not go at all. The trouble was that they made certain sounds and signs that always seemed to the student to mean that they would go in the golden future, when in reality they were not only not designed to go, but their design was the only thing that prevented their going. This was literally true. To show how far this tendency went in the two-cycle business one instance will be enough. Only three years ago a man, whom it has become a common habit to call one of the very foremost two-cycle designers in the United States, sent out to several people, in exchange for money, four-cylinder engines that he said would develop 40 horsepower, but that could not be made to run at all by any corps of experts. They could be made to turn over a little, but the only thing they developed was heat, and possibly the owner's character. The following season the builder announced that after full and mellow consideration he had come to the decision that the cylinder-ports were so designed that the engine never could have run, and he sent out a new set of cylinders to each owner, free. I am acquainted, personally, with three of these extraordinary machines. One of them, with its new cylinders, afterward came to me, but it was still not feeling very well. I found that it had a patent automatic compensation carburetor that not only would not compensate, but, after you had patiently compensated it by hand it would automatically shift itself into the worst possible adjustment, almost to a hair's breadth. So I stripped it off and replaced it with a good carburetor, and the engine's revolutions increased greatly and she developed about 29 horsepower. Now the designer has stripped it off also, but where the extra 11 horsepower may be I have no idea.

And yet, in the face of all this, what I said about the infallibility of the marine motor, two-cycle or four-cycle of best sorts, is in this year true. And that is almost a miracle. The United States has one mighty unseen force in its favor in any evolution of this kind. Entirely contrary to her own general belief she is, among the great manufacturing nations, the best example of a free trade country in existence, and every political economist and everybody else with a grain of common sense knows that free trade is the only working condition under which you may get any kind of decent industrial development. She has protection as to her external trade, but the United States' external trade amounts to nothing when compared with her internal trade. She has free trade within 3,300,000 square miles among 80,000,000 people, with all sorts of products from sub-arctic to sub-tropical, and the rest of the world might sink into the sea without injuring her very much. So on her free trade depends her prosperity, and if she had still more of it she would be still more prosperous. Before very long, when this present government in England shall have finished dying, we shall have the beginnings of free trade within the British Empire, 12,000,000 square miles and 450,000,000 people. But the United States is, in these days, the greatest free trade country among manufacturing nations in the world.

Now, in the United States, there are said to be over 3,000 manufacturers of gasolene engines, and as there is, in this case, no artificial protection in the form of a trust, each of these has the free and glorious privilege of competing with all the others and capturing all the trade because they build the best engine. And this is to a great extent what has happened. It is notably true that the men who have built the best engines of their particular sort have largely captured their particular trade. So individuality, as ever when it is permitted, has justified itself, and free trade, as ever, has worked for the benefit of the consumer, who is, after all, the only man worth the State's consideration; because we are all consumers.

So this is what has accounted for the amazing development. Under free competition, natural selection and the survival of the fittest have taken place as nicely among marine gasolene engines as among post-pleistocene mammals, and more rapidly. They have absorbed one another's tendencies and stolen one another's ideas. They have jumped one another's patents and altogether coalesced so luxuriantly that these few short years have served to revolutionize the whole business. And the consumer has skinned the pot of the boiling. It is one of the finest examples this continent has furnished of the manufacturer performing properly for the benefit of the consumer, and it is doubtless only a foreshadowing of the blessed time to come when the consumer will be paramount and the voice of the manufacturer's association, weeping for a little more protection, will be silent in the land. Then you and I may go out and buy the best thing in the cheapest market, as the Lord intended, and there will be happiness throughout all the earth.

Though it may seem like applying a vast philosophy to the development of the gasolene engine, one more point is worth noting. Just so surely as you throw all men in a heap and give them a free and proper chance to compete with one another, just so surely will one man come out on the top of the heap. That is what is called the triumph of individuality. It is the wreck of socialism and the hope of everything else. It is the detail that makes personality dominant and makes our uncomplicated world consist of ourselves, a few friends, a few charming acquaintances, and a few notable personages. The struggling masses and the wealthy classes, that we read about and are depressed by, all become myths, which they are, and there are only you and me and a few well known people. That is another blessing.

I was simply establishing a principle. We have not moved from motor-boats and gasolene engines at all.

Let us suppose that you are a bewildered gentleman wishing to select an engine and wishing to get the best. You stand up, one lone pilgrim with a pen and a checkbook, and over against you are the 3,000 engine builders, or whatever the number may be. It resembles, a little, Horatius and the Tuscan army. You announce in a loud voice that you wish to purchase a heavy-duty engine for any sort of a cruising boat from 25 to 125 feet long, and the army comes on with a rustling of little pamphlets like the leaves of the forest. But you are freed from all terror. You have learned the unseen principle on which these things work and you have laid it away in your heart. To the first man who advances, bearing aloft a beautiful picture book and with words proceeding out of his mouth like a two-edged sword, you ask one question:

"In what years did you win the Marblehead race?" There is no reply, and his face becomes as the face of a man lost in thought.

"Or the Bermuda race?" you continue. There is also no reply, and you say:

"Possibly these questions are unfair. Name the largest and best cruising boats in which your engines are installed."

> And the great Lord of Luna fell at that deadly stroke,
> As falls on Avernus the thunder-smitten oak.

You note someone saying: "Will you excuse me a moment, but I have to see a gentleman ——" and you will see that the place where he stood is vacant. And you advance into the army asking always the same three changeless questions and refusing to be turned aside from them; and as you go on you see that the army begins to open before you in lanes that widen into streets, until at

(*Continued on page 66*)

"Motor-boating is the one sport of kings in which the poor man can have much more fun than any king, because he has so many less things to think about"

One of the joys of travel in the Middle West is a sail on the Great Lakes, our wonderful inland seas. The steamers are excellent, and between Buffalo and Detroit one may go either by boat or by rail, north or south shore, on a through ticket

SEEING THE UNITED STATES

By PHIL M. RILEY

Photographs by EUGENE J. HALL, BROWN BROTHERS, A. RADCLYFFE DUGMORE, N. L. STEBBINS, and others

"YOU wonder I don't go abroad?" queried Mr. J. Wilkinson Elliot, the well-known nurseryman. "I'd like to, but there's still one state I've never been in."

This remark seems to typify the feelings of a rapidly growing number of really patriotic Americans who realize something of the beauties and attractions of Europe, but who prefer to defer their visits "across the pond" until they know their own country quite thoroughly. And a very laudable sentiment it is, for the old joke of the American who has a fair general knowledge of Europe but can give an European no detailed information about America, outside his own state, has fast been becoming a shameful reality as a result of the craze for foreign travel.

"See America First" will prove a very delightful motto to follow, and many are finding carefully planned trips to a new locality every year the most enjoyable way to spend the annual vacation, whether it be in summer or winter. The old notion that a vacation consists of complete relaxation and utter laziness is fast giving way to the more sensible idea of a complete change of scene combined with activities which are enjoyable. Both of these are found in large measure when traveling in America, and then, too, unlike many other vacations, one enjoys all the comforts of home en route and feels that the journey is highly educative as well as pleasurable. Before the homeward journey, also, there are usually a few days spent at one of the luxurious resort hotels to vary the period of travel and indulge in outdoor recreation.

Until one begins the systematic preliminary reading desirable before taking a vacation tour, the greatness and varied interests of our country are not fully realized; but when the time comes to choose a destination and route one finds it a puzzle to select from the wealth of possibilities. In the vast expanse between Atlantic and Pacific is included nearly every sort of climate, scenery and agricultural or industrial activity known to man. Every state has its interests and makes its strong appeal to the tourist. No two are quite alike; in fact, some of the states are in certain ways as radically different as two foreign countries, yet they are all parts of one great country, throughout which the Yankee tongue is spoken and typically American ideas and institutions prevail.

There is usually a desire to see some of our great scenic wonders and beauties first. Almost every state has at least one attraction, scenic or other wise, worth crossing a

The Bridal Veil Falls is only one of the many glories of the Yosemite Valley

continent to see, and there are certain localities in every section which almost seem to be set apart as great play-grounds for the nation, where a variety of outdoor sports may be enjoyed in settings of great natural beauty.

Although every resort of consequence, which may be the resting and turning point of a sight-seeing tour, now has its golf greens, tennis courts and the like, there is always one star attraction for each, and so one's tastes will influence him largely in the choice. But let us make a start near home and gradually extend the field from New York to include those states which offer the greatest attractions.

NEW ENGLAND

New England is one of those groups of states to which people seem naturally to gravitate in the vacation season. Connecticut is, perhaps, the least interesting of them all to the tourist. Its wooded hills and fertile river valleys are very beautiful, the latter being of especial interest because of the well-kept farms and the unusual sight of tobacco growing in the North under acres of cloth covering; while in Long Island Sound, along the southern boundary, there is ample opportunity for yachting and power-boating.

Continuing eastward on the lines of the New York, New Haven & Hartford Railroad, one reaches Rhode Island, a very small but a very delightful state. Here are far-famed Newport, round trip fare from New York $9.40, and Narragansett Pier with their magnificent summer residences and aquatic recreations. Up Narragansett Bay with its numerous islands is a glorious playground for the motor-boat and the small sail-yacht. The best way to reach Boston, the hub of New England, from which one starts on most trips further north and east, is by Fall River or Providence boat from New York, the fare being $4, stateroom $2. A moonlight trip up the sound is a pleasure long to be remembered, and from Fall River the journey by rail is only a little over an hour.

The coast of Massachusetts is noted as a seashore resort with all which that implies. Cape Cod because of its strange hook-like formation is of much interest, Provincetown being the principal town. It is especially attractive because of its quaintness and wonderful circular harbor. It is easily reached by rail from Fall River or Providence, or by boat from Boston, the latter round trip fare being $1.

Maine is the most popular Eastern fishing country and the guides there are excellent

Farther north, one comes to old Plymouth, the landing-place of the Pilgrims. Here, as well as in most of the coast towns and Boston as well, one finds as great a wealth of historic associations as his heart could wish. Nearer Boston are Hull and Nantasket Beach, a famous seaside resort reached by a short sail down Boston Harbor.

Over the lines of the Boston and Maine Railroad the North Shore is almost a household phrase in American life. Some of the most magnificent summer homes on the coast are located at Manchester and Magnolia, round trip from Boston, $1, while Beverly is now regarded as the summer Capital because of President Taft's annual presence there. Other nearby points of interest are Nahant, Swampscott and Revere Beach, the Coney Island of Boston. Then there is quaint and beautiful old Gloucester, a superb sail from Boston, the round trip being 75 cents. From

Pike's Peak near Colorado Springs is a Rocky Mountain landmark which every good American should visit when in the West

Lake Placid and Saranac Lake nearby, are in the heart of the Adirondacks and easily accessible to the fishing country in the "Great North Woods"

Gloucester a five cent fare by trolley takes one to Annisquam, a little dream town of winding streets, apple trees, inland coves and picturesque little colonial houses. At all of these nearby points one can enjoy sea fishing; and at most of them, bathing; yachting is also popular, particularly at Marblehead. The lover of Colonial architecture should not miss Salem, Newburyport, Concord or Lexington, which are rich in well-preserved old houses, most being of historic interest. Fares from Boston vary fromtwenty-five to seventy-five cents. No canoe enthusiast should leave Boston without seeing the beauties of the Charles River.

Central Massachusetts is of note chiefly as a beautiful rolling farming country, cut up by many small rivers; but west of the Connecticut in the charming Berkshire Hills it becomes quite mountainous. Here at Lenox and Pittsfield are beautiful country residences, hotels particularly popular in autumn when the foliage is turning, and all sorts of outdoor recreations. Pittsfield is reached from New York over the New York, New Haven & Hartford Railway after a pleasant trip beside the Housatonic River, round trip fare $6.30.

Vermont is always thought of as a rolling country of wooded hills and prosperous farms. With no large cities in the state and the Green Mountains as a landmark, one who loves the country will feel right in his element. Lakes Champlain and Memphremagog are the real vacation points where there is good boating, bathing, fishing, and camping. Burlington is the starting point for all points on Lake Champlain, and is reached from New York over the New Haven road to Springfield and the Boston and Maine Railroad and connecting lines, round trip fare, $13.65; or from Boston over the Boston and Maine Railway and connecting lines, round trip fare, $10.50.

In going to Lake Memphremagog from New York the route is as just described, except that one continues to follow the beautiful Connecticut River valley over the Boston & Maine Railroad almost the entire distance to Newport, the round trip fare being $17.75. From Boston, over another division of the same railroad one follows another attractive river, the Merrimac, up through the picturesque lake country of New Hampshire, crossing into Vermont at Woodsville and so on to Newport, round trip fare, $10.60.

Within an hour or two from New York City, New Jersey offers river and lake resorts of great beauty with boating and fishing

Yachting is the sport royal along the New England seacoasts and in the Great Lakes, particularly at Mackinac Island

If one goes up through the granite hills of New Hampshire for the first time it would be folly indeed not to see something of the lake country in the central part of the state, which, because of its proximity to the White Mountains has been called the Switzerland of America.

Five principal lakes beckon alluringly. Lake Sunapee, round trip from Boston, $4.50, is attractive and very popular; Winnisquam, fare from Boston to Lochmere $1.97, is chiefly known for its fishing; Squam, round trip to Ashland, $5.10, is picturesque and popular in its cottage and hotel life; Newfound, just north of Bristol, is one of the most beautiful and strangely the least popular (and so excellent for camping and fishing), round trips from Boston, $4.40; Winnipesaukee, the largest and most beautiful of all, with its nearly three hundred islands, nearby peaks and distant views of the White Mountains, forms a picture of rare beauty very seldom equalled. Here one finds hotels a plenty, cottages by the hundred and recreation possibilities of every sort known to the lakes. A large steamer plies between the principal points of interest, Weirs, Centre Harbor, Wolfboro and Alton Bay, giving for seventy-five cents a round trip never to be forgotten. All of these places are reached by the Boston and Maine Railroad, the round trip from Boston being $5 for all except Alton Bay, which is $4.

It would be a pity, too, to go through the Granite State into Vermont without a peep at the White Mountains; one would better spend his whole vacation there, particularly in autumn. Undoubtedly the best way to see

(*Continued on page 90*)

The golfer need not want for his favorite pastime in winter, for it may be enjoyed in Florida in the shade of blossom-clad trees

A St. Lawrence skiff, a boat that is sharp at both ends, easy to row, and almost as good in heavy weather as a whale boat

A skiff or punt is usually called safe, because it is flat and broad, but it begets a recklessness that is bad for a child

SAFE BOATING FOR CHILDREN

THE FEAR OF BOATING ACCIDENTS DESTROYS MANY A MOTHER'S SUMMER HAPPINESS — DANGER LIES WHOLLY IN A CHILD'S IGNORANCE — IT IS A PARENT'S DUTY TO INSTRUCT THE CHILD IN THE USE OF BOATS AT AN EARLY AGE

By W. E. PARTRIDGE

Photographs by Edwin Levick

PEOPLE often shudder at the idea of small children alone in a rowboat, the reason being that they know nothing about handling a boat themselves. Hence they hope to make their children safe by commanding them to keep out of boats entirely. For a few years, perhaps, they may succeed; but later, the child, away from parental restraint and utterly unfamiliar with boats, goes afloat, and what wonder that drowning accidents sometimes follow? The behavior of boys and girls in boats at picnics makes one feel that they are playing with death. The play seems ready to turn to earnest at any moment. Invariably the reason is the utter ignorance of how to manage a boat and of all that goes to make a boat dangerous or safe.

To-day the rowboat is not much used by older people, the motor boat having taken its place; but it is quite as popular as ever with the children. For those who have been properly instructed, the rowboat is only a little more dangerous than a wheelbarrow. Even a child of six can be so instructed that he is in no more danger in a rowboat alone than he would be at play on a stone sidewalk, and it is the duty of every parent to so instruct his children at the first suitable opportunity.

When the child knows that permission to use a boat by himself depends upon learning how to handle it and always following instructions, it will be a surprise to any one to see what a clever careful boatman he becomes. The earlier his education begins the better, for he is likely to learn thoroughly if his instruction begins at five years of age rather than seventeen.

Boating cannot be learned as most children learn to drive a horse, or think they have learned, because the child must have all the knowledge; the boat does not supply what is lacking in the child. In driving, the training of the horse is much more than that of the child. This training helps the driver, but the boat does not contribute to help the child's ignorance.

In order to speak intelligently about a boat the names of the most important parts must be known. The front end is the bow; the rear end is the stern; the cross seats are thwarts. Aft means toward the stern; forward, toward the bow. The space between the after thwart and the stern is called the stern sheets. Usually the seats in this space have the same name. The right-hand side is the starboard and the left-hand side, the port. The strip that forms the edge of the boat is the gunwale. The rudder is located at the stern of the boat, and is used for steering. The keel is what might be called the backbone of the boat, extending the whole length, and at the stern is often made deeper by a piece called the skeg. The rope attached to the bow for fastening the boat is called the painter.

It is impossible to learn the reason for many of the names. Some of them have come down to us from antiquity through many languages. We use them because they are definite, universally understood and there are no others to take their places.

The first boat a child usually has anything to do with is the punt. It is broad and stable, so it is called safe, but it begets a recklessness that is bad for the child. A round-bottom boat, either of the St. Lawrence skiff type, or a light boat with a square stern, is best because the child is forced to learn caution.

The first lesson to be taught is how to get into a boat. In stepping into a boat from a dock or float, the foot should be placed on the centre line, so that the weight will be evenly balanced and the boat will not rock or roll, but remain on an even keel. This seems almost too simple to mention, yet it is difficult to get a child to do it properly. With a light boat or canoe it is even more of a task. One should place the foot on the centre line and at the same time stoop forward and take hold of each gunwale. In this position one is perfectly balanced and there is no tendency for the boat to tip toward either side. One can move to a seat either in front or behind without danger. When the boat is too wide to reach the gunwales, stand in the middle

When holding the oars ready to reach forward and begin the stroke, the wrists should be elevated a little, turning the oar blade

and balance so that there is no tipping. While one is thus balanced in the middle of the boat there is no danger. When one gives directions of this sort in helping a woman into a boat or canoe, she usually says "yes" and puts her foot eight or ten inches off the centre line, and if one does not hold on to the lady and the gunwale as well, there is a fine opportunity for a spill. Men who let boats know this well and, as shown in our pictures, always hold fast to the gunwale while people are embarking.

When one is in a boat the secret of safety is in keeping the boat on an "even keel;" that is, the two gunwales are kept level. To do this we must have the weights evenly distributed across the boat. If you have to move backward or forward, don't stand up, don't go tumbling about. If both hands are free, take hold of the gunwale and keep on the centre line. It is difficult to make people understand this. Children, especially those who have been in the habit of tumbling about in flat-bottomed skiffs, have no idea of the importance of moving in such a way that the boat does not tip. This is the lesson that should be thoroughly taught — keep the gunwales of the boat level. Innumerable drownings occur because people disregard this vital rule.

The first step in changing places is for two persons to move simultaneously to opposite sides of the boat, keeping in perfect balance. When one reaches the gunwale, or both, if of equal weights, they are ready to move toward each other and pass, still keeping on opposite sides of the boat. Then they move together to their places. The motions should be regular without any rolling of the boat. It is difficult to persuade grown persons to undertake this simple manœuvre, or even to make the attempt. If one insists on the fine points he will be met with the remark, "You are afraid"; yet if they received proper attention the number of drownings would be greatly reduced.

In pulling, the wrists should always be raised to bring the blade of the oar into a vertical position

Many people fall overboard from reaching for things on the surface of the water, as in gathering pond lilies. In a large or steady boat, like a punt, the danger is in falling out; in a light boat, the danger is in a capsize. One who can throw weight far enough "in board" (into the boat) to balance the outstretched arm may reach out, but ordinarily it is best to bring the boat to the object, and prevent reaching.

In a boat the directions are to sit still, especially if there are several on board. Do not jump if the boat tips. Throwing the weight over in this way often makes the boat upset the opposite way. Never rock the boat under any circumstances. It is difficult to find words sufficiently strong to condemn such a thing. It is a deliberate invitation to death. The profound ignorance of those who do such a thing is the only reason for not making it a prison offense.

If a boat is upset, don't be frightened. Hold fast to the boat. Though one cannot swim nor float, the boat will give sufficient support to keep mouth and nose above the water till help comes. Don't cling to another person. It will probably drown both. When thrown into the water do not throw the hands above the head and scream. The raised arms force the head under water. Screaming empties the lungs when you need them full. Save your breath to keep yourself afloat.

When one reaches a landing, disembarking is easily made safe and easy. The gentleman on the dock, holding the boat in place with one foot, offers his hand, the passenger takes it, then stands erect on the keel, puts one foot on the dock and steps out. This is quite the reverse of embarking, and when done exactly as just described there is no rolling of the boat and no cause for any danger whatever.

The hands are often carried too low as the oars leave the water. The blades should not go above a horizontal position

The younger the child the greater will be the interest in the elementary lessons. They can often be made the object of an outing and furnish the pleasure. Later in life simple things lose their interest and elementary lessons become a bore and little attention is paid to them. Learned early they become second nature.

When making a landing and going ashore the rule is to take the painter with you. As one steps out, the boat tries to move away in the opposite direction. In still water, the boat will move astern readily, if one starts forward quickly, so it often happens when one comes bow on to the dock and starts to get out he finds the boat has slipped away for some distance owing to his forward motion. In stepping out upon the dock a more energetic motion is given and the boat goes still further away. The heedless one, who forgets his painter and finds his boat adrift, may perhaps recover it with some difficulty, and perhaps not. When landing under any circumstances, the safe rule is to have the painter in hand and to make the boat fast before leaving her. In tidal waters there can hardly be any exception to this rule. In fresh water, however, where the boat can be hauled up for half her length when landing, this may answer and be considered safe. The only exception is when some one is left in charge.

Dropping the wrists after the stroke is ended brings the blades of the oar into a practically horizontal position, constituting the "feather"

As soon as a child begins to feel at home in a boat he wishes to "make it go."

To save trouble in teaching he is usually given that abomination, the pin oar, and so never learns to row. A round oar, properly leathered so that when dropped it does not slip out of the rowlock, has all the advantages of a pin oar and many others besides. Let the oars a child begins with be of plain spruce, six or seven feet long.

For general rowing, the spoon oar is always best, and gives the expert much the greatest satisfaction, but for the child the straight oar is best, because it can be used for so many purposes which would surely ruin a spoon oar. Spruce is preferable because it is much lighter than ash, of which the greater number of straight oars are made.

Sculling. Right wrist bent, oar turning toward the spectator

Proper rowing is possible only with a loose oar, and it may be said that one should always "feather" the oar. That is, when the oar is out of the water, going forward for a new stroke, the blade should be laid flat so as not to catch the wind or the waves. This cannot, of course, be done with an oar fastened on a pin. With the loose oar it is so simple a matter as to become almost automatic. When holding the oars ready to begin the stroke, the wrists should be elevated a little, and in this position one reaches forward, puts the blades into the water and pulls the handles toward him. The fishermen sit erect in rowing; so did Hammil the famous oarsman, and so does the famous Belgian crew. But it is best for ordinary mortals to lean forward somewhat and stretch the hands out in front when putting the oar into the water; and in pulling to move backward so far that the body is tilted backward a little. As the blade of the oar is taken out of the water the wrist is dropped. This brings the blade flat or parallel to the surface of the water. As the hands go forward they should not fall below the level of the rowlock and the oars should form a straight line across the boat when seen from ahead or astern. As the blades are horizontal when going forward for the following stroke, they catch neither water nor wind, passengers are not spattered nor is the progress of the boat retarded.

When the child begins to row do not go out with the idea of going somewhere. Just go to teach him *how* to row. That will be excursion enough for one day. Just as the getting in and out of a boat, changing positions and learning something about balancing may each be made an interesting lesson.

To learn how to put an equal force into each arm and make the boat go in a straight line is not quickly learned, and while the child is mastering the oar, it is best to use a rudder and steer. As soon as the oars are somewhat under command, begin the lesson of steering. To hold a straight course, tell the child to find some object just over the middle of the stern and when it seems to move to one side or the other pull the boat about, with one oar or the other until the object is again in its place. This is a good exercise, because it takes the eyes away from the oars, and makes control of them instinctive.

Later one has to steer and see where one is going at the same time. Do not stop rowing, or turn on your seat and look around. Instead, turn the head and look out of the corner of your eye. The child should learn to see in this way, without stopping his stroke, merely glimpsing things.

Often the child wants to make speed and so pulls harder with the right arm. He should pull harder with the left arm and no harder with the right — easy work with one and hard with the other.

Left wrist bent, oar turning away from the spectator

One of the things which the beginner is reasonably sure to do is to have his oar caught in the water—"catching a crab," it is called. The remedy is an easy one; lift the handles of the oar so that the oar comes out of the rowlock. The trouble is over in an instant, and without danger. Holding on to the oar and trying to lift the blade out of the water is dangerous and an upset is possible.

Another means of propelling a boat is with one oar, called sculling. The oar goes over the stern resting in a half-round notch called a "scull hole," or in a rowlock. The oar is placed over the stern, the lower edge of the blade pointing toward the keel. Taking hold of the handle with the wrist depressed, the handle is carried across the boat. Raising the wrist, the angle of the oar is reversed and the handle is carried across in the opposite direction. The blade at an angle acts like a propeller. The inclination keeps it under water. An expert will scull a boat nearly as fast as he can propel it with an oar, but as the boat is jerked from side to side with the motion of the oar, this method is not suitable for pleasure boating.

A woman getting into a boat in a proper manner. Her foot being placed in the centre, there is no tendency to make the boat tip

In getting out of a boat upon the dock, a long step from the centre of the boat leaves it almost entirely undisturbed

Fishing in the big tide-water pool, sixteen miles from the river mouth

Stuck in mid-stream not enough water to float the loaded and leaky boat

FISHING FOR SEA-TROUT IN NEW BRUNSWICK RIVERS

By A. RADCLYFFE DUGMORE

Photographs by the author

FOR many weeks the fishing fever had been disturbing our minds and making our bodies restless. Ever since the first bluebird had come north and we had listened with delight to the ethereally delicate song, we had talked and thought and dreamed of fishing. (It was myself and wife that were planning this dissipation.) While we were debating the important question of where to go a friend suggested "a perfectly splendid place" in New Brunswick, where trout of immense size and unquestioned gameness could be found in virgin pools of streams unknown to sportsmen. This certainly sounded alluring.

A fine three-pounder. "The comparative size of the tiny creel and the large trout was too much for John"

At last the day came and we started with glad hearts, for all seemed to be going well, notwithstanding certain small details which might have annoyed some people who were not suffering from a bad attack of fishing fever.

In due course we arrived at Fredericton, and the day following we headed north, going by very slow train to C—, on the banks of the M— river, arriving at midnight. Early next morning our guide came to the hotel and said that though the season was a trifle early he thought he could take us to where we should catch some good trout.

We took quite a fancy to this guide, who was a true son of Ireland, good tempered, and of wit full to overflowing; and, what was still more to the point, he knew a good deal about trout fishing. Very large flies, he declared, were necessary for the early fishing — No. 1 salmon, no less. I had with me a book of salmon flies, but having practically never used anything larger than No. 6, I had very few of the larger sizes and, frankly, I did not have much faith in them for trout. It had nearly always been my experience that small flies proved better than large ones. However, to avoid the possibility of having the guide blame our tackle if we failed to catch the fish, I searched the town and procured some very badly faded Silver Doctors and Wilkinsons of the desired size. With our outfit in a light wagon and ourselves in a carriage we started on a twelve-mile drive to a river near which John, the guide, told us that his married daughter lived, and there we could put up for a couple of days while we tried the fishing.

We found everything thoroughly to our satisfaction — a nice clean house on a very tidy farm, and a promising river within stone's throw. After a bite of lunch we assembled the rods and were poled up the river to a likely looking pool, where we disembarked. Scarcely had I made half a dozen casts with the No. 1 Wilkinson, at the head of the pool, than a huge surge where the fly had just touched the water set my heart throbbing. Almost before I realized what had happened the line tightened with that magnetic thrill which makes the blood of a fisherman dance in his veins. There was scarcely need to strike, but I did so, and was rejoiced to find the hook had gone

The strike. The river was ideal in most respects—fairly swift, clear, and icy cold, with deep pools here and there in which lay the big fish

home. Just at first that fish played a gentle game, going slowly down stream to deep water, and I could not estimate his size; but suddenly he resented my restraining his movements, and started to make things lively, first thrashing the water as he came to the surface, then making frantic runs here and there, trying all the while to get near a mass of drift brush which was caught against the bank at the farther side of the stream. Had he once attained his object it would have been good-bye to him, so I gave him the butt as firmly as possible, gradually steering the big fellow away from the danger, until I had him in clearer and quieter water. Every nerve in my body was tense with excitement, and if that fish had escaped I believe I would have cried — or sworn — but we kept together, though between us there was sometimes seventy feet of line, taut as a fiddle string, now quiet, now ripping through the water like a keen-edged knife. But the end was near. Slowly the big fish was coming. I had given him no rest and he was tired. Choosing a quiet piece of shallow water I reeled him in toward the small landing net; but the net looked too small, and I feared it would not hold him. Very gradually I worked the big fellow toward it and at the critical moment scooped him up; but my surmise was correct — the net was too small, and the fish gave a mighty jump and cleared it, but fortunately the hook still held. To beach him was now the only way, and I backed up to the sandy bar and got my prize safely ashore. What a beauty he was—three pounds, five ounces — not very large, it's true, but such a fighter; so silvery and so clean-cut; not two weeks from the ocean! Yes, he was a prize, and I could only regret that he had not fallen to my wife's rod (that sounds well!)

Now my wife had with her a creel, as she called it, and this creel was of the smallest size that is made — about nine inches long. It was a cause of much amusement to ourselves and to any one who saw it; but the wife maintained that she had never caught, and never expected to catch, a trout long enough to *bend* in that creel. All the trout she caught had to be shaken backward and forward in order that head and tail might be said to touch both ends of the basket. In vain had I tried to persuade her not to bring such a ridiculously useless article with us, but being a woman — well, the basket came, anyhow.

John declared it was just about big enough to carry a cast of flies, "if they weren't too large"; but still the wife insisted that she never expected to catch a trout that could not be put in that basket, and that, too, without its having to be bent. When John pointed to my fish and asked her whether that would go in her creel, she ventured to remind him that *she* had not caught it, and with that she began to whip the pool with a No. 1 Silver Doctor. In two or three minutes I heard a shriek of delight and saw her, with bowed rod, playing a fish, her first decent-sized trout (though she had at various times caught a large number of bass, one of which weighed ten pounds). Her excitement was delightful to watch, and the way in which she hurried that fish to the net was almost laughable. At last she had him, and he weighed a pound and three-quarters. But John never mentioned the tiny creel. He winked at me, and I guessed he was waiting for a larger fish. Pretty soon she got another one which, though a splendid fighter, was half a pound smaller than the first. With the exception of a few small fish we had no more luck that day, but we had thoroughly enjoyed ourselves, and the wife acknowledged that, after all, there were large trout in the world, though she had previously doubted it.

The river was an ideal one in most ways — fairly swift, clear, and icy cold, with deep pools here and there in which lay the big fish. On the second day of our stay here I had no luck at all, but the wife caught a fine three-pounder. Unfortunately I was not with her when she landed it, but there were great stories of her excitement. By bad luck she had left the tiny creel at the house.

The landing. Bringing one of these fighting trout to the net is not always as easy as it seems

On the third day we went down stream in the boat, fishing as we went along. We were going very slowly, the wife sitting in the bow casting carefully over every likely place. Suddenly there was a splendid rise at the fly; she struck too quickly, and missed. Almost instantly she had that fly back on the spot, but nothing came. Again and again the large fly was dropped on the quiet water behind a submerged stone, and with a disconsolate sigh she was just saying what a shame it was to have lost such a monster (all fish that rise to her fly and miss it are "monsters"), when there was a mighty splash and a beautiful fish leaped clear out of the water as he seized the fly. A more perfect rise I have never seen. Away he went, down to the quicker water. Nothing could stop him at first, and the chances seemed entirely in his favor. Gradually the wife got control of the reel, and it was a caution the way in which she made that line come in. The rod bent till the tip touched the water, but nothing would do but that that fish must continue coming. Without realizing how close the fish was, she reeled in past the nine-foot leader. At that moment she weakened, and the fish took advantage of the relaxing in the strain and dashed off. Down went the tip till the rod pointed straight at the fish; the knot caught in the top ferrule, and the sudden jerk pulled out the tip and down the line it slid until it actually hit the fish. Things were certainly looking black.

"Look out! The big divil is eatin' the rod," called John, as the fish smashed the tip into tiny pieces; but the wife held on, and jumping out of the boat, soon had her three-pound fish safely beached. We laughed until there were tears in our eyes as we got out another tip, warning the wife not, on any account, to let the fish eat it.

"Now, let's put him in the creel," said John, with a twinkle in his blue eyes. "Please, ma'am, an' here's the creel, will ye put him in, yersilf?" The comparative size of the tiny creel and the large trout was too much for John. "Let's cut aff his head, ma'am, and put that in, for it's all it'll howld," and since that day the tiny creel has never been in evidence. During the afternoon we caught several fair-sized fish, and all of them great fighters.

The following day we left the farm and drove to another and wilder river fourteen miles away. John had a boat on the T , and in this we started down the river eight miles to his camp. Unfortunately the water was low; more and more thinly it spread over the widening, stony bed of the river; finally it became apparent that the boat could only be taken down if empty, and so we walked to the camp.

Cooking in the rain is an excellent test of good nature. Without a proper amount of camp philosophy, little inconveniences like this are sometimes regarded too seriously

Fishing on the way down the river. Nearly every pool yielded trout — many of them large ones, and all of them great fighters

It was a comfortable log cabin, beautifully situated, overlooking the river. Near it was a large and likely looking pool, so we wasted no time before trying our luck. I lost two good fish and the wife took the greatest care in explaining how and why I had lost them. There were so many reasons for their having gotten off that I was really surprised that they should have stayed on at all. To lose a fish of decent size is bad enough, but how it happened should never be told except by the unfortunate fellow who lost it.

However, I kept my temper (more or less), said nothing (or very little), and kept on casting and watching for retribution, which was thoroughly mean and cruel. It was not long in coming, and to my great delight I saw a nice fish take the fly that my wife so skilfully offered. Splash! splash! whirr! the running line made the reel shriek and the rod bent in a graceful bow. Only for an instant, and then it sprang back, the line hung limp — the tension was gone, and so was the fish. Had the wife been a man, we know exactly what she would have said, but the running water made so much noise that I could not hear her remarks. Then smiling — and that was contemptible — I asked her which of the many aforesaid reasons was the one which accounted for the loss of the immense (I put emphasis

on that word) fish. Soon she had another and lost it, so we called quits and had a good laugh over our bad fishing. No luck fell to our lot that afternoon. We caught nothing heavier than three-quarters of a pound. Evidently very few large fish had come so far up the river. So we decided to work down stream until we should meet them.

John thought it would be wiser to use a large, flat-bottom boat for the trip, as we could then fish from it with comfort, whereas the smaller one was so cranky that fishing from it, when loaded, would have been rather too exciting, and in places, even dangerous. The flat-bottom boat was evidently quite safe unless she took it into her head to sink, and from the way the water poured through the seams when we launched her, this was by no means a remote possibility. The next morning when we went to load her she was safely ensconced on the bottom. Fortunately the water was not very deep, and after some difficulty we got her afloat and loaded, but for the rest of the trip bailing was an important part of the day's programme. At nearly every pool on the way down we caught fish. Many of them were large ones, and gave us no end of fun and as, unless they were injured, we always returned them to the stream, we felt there was no necessity for limiting our catch.

Varying hare. It seemed absolutely devoid of fear, hopping about and eating unconcernedly

In one of the pools a big chap rose several times to our flies without actually touching. "Now," said John, "this is the time to produce my big bird," and out of his pocket came an immense bass fly — the largest I have ever seen. It was put on the wife's leader and was sent whizzing through the air toward where the fish lay. With a mighty splash the fly struck the water. This was too much for any self-respecting trout. Up he came and with a gulp took the offending disturber of his meditations. What a time he made of it! Up and down the pool; here, there, everywhere, and finally, just as it seemed about time to bring him to the net he got loose and that was, of course, the last we saw of him. But it goes to show what I have always maintained — that occasionally a very large fly will excite or provoke a trout or salmon, and prove very effective when all else fails.

For several days we continued our way down the river, camping, usually, fairly early in the day. One afternoon, as we were about to pitch camp, the rain came down in torrents. Some women would have been discouraged at getting their hair out of curl, but the wife thought it great fun. Dressed in a waterproof, with the case of the waterproof for a hat (that's an idea worth remembering), she cooked us a delicious dinner.

I have been camping with people who, when it rained, regarded it as a personal insult for which one of the party (I was usually the one) was entirely to blame. "Why hadn't I told them it was like this, and of course they wouldn't have thought of coming." "How could anyone be expected to sleep on wet boughs — in fact, how could the boughs be cut when they were wet, and even the ground was wet," and so on; growl, growl, growl, simply because of some nice, refreshing rain. Why, I have had it refresh me for sixteen consecutive days, but growling did not do any good — in fact, so far as I know, growling has never yet stopped rain or any other trouble; rather the reverse, for it seems as though the growlers always have the most troubles.

Our last camp was at tide-water, some sixteen miles from the actual mouth of the river. The tent overlooked a very large, deep pool, fully 200 yards long. On the opposite side a small sparkling brook added its share to the larger river. One day the fishing was not good in the big pool owing to the very high tide, so we amused ourselves along the bank of the smaller stream, and we made acquaintance — a sort of bowing acquaintance — with a very clever and very aggravating trout. He lived in a small pool under an old, dead birch stump which bent over the water. I cast toward his home, thinking it a likely place, and it was, for instantly there was a splash and a glint of silver as the fish, which we subsequently named McGinty, came to the fly and missed it. Again I cast and saw him leave the shade of the big stump; but he changed his mind and returned. For some time I continued casting, without results, so I tried another fly and McGinty made a dart at it, but without success — at least, so far as I was concerned. After awhile I actually hooked him, but only for an instant, and off he went. Then we gave him a rest, after which the wife tried him and had two fine rises and two equally fine misses.

So we left McGinty and went farther up the stream, getting some very good fishing, but nothing over one pound. On returning to McGinty's pool an hour or so later, we again tried to coax the wily fellow, but beyond coming out to take a look at our flies, he would have nothing to do with us. Next day we tried him again, with just about the same luck — made him rise several times and hooked him once, but McGinty didn't like us well enough to desire a closer acquaintance; for though we spent hours trying to lure him out of his hiding place, we had to acknowledge ourselves beaten.

Just trout — bright, silvery fellows quite recently from the salt water

While fishing we saw several moose along the river side, and one time got to within about twenty-five feet of a young bull, and watched him feeding for a long time. At night, as we lay on our bed of balsam boughs, we could hear the big creatures splashing through the water, as

(*Continued on page 88*)

That nature surpasses man as a landscape architect cannot be denied in the face of such evidence as this — and 125 acres of it cost only $500; this included about fifty acres of good, tillable land, the rest mountain and forest. West end of the house from the pasture

A VACATION ON AN ABANDONED FARM

HOW ONE CITY MAN HAS SOLVED THE VACATION PROBLEM, AND INCIDENTALLY PROVIDED A HOME FOR HIS OLD AGE, BY BUYING AN ABANDONED NEW HAMPSHIRE FARM AND MAKING PLAY OF THE WORK OF RECLAIMING IT DURING HIS VACATIONS

By E. GORDON PARKER

Photographs by J. J. Parker and the author

ABOUT four years ago my family consisted of a girl eight years old, a boy of six, and a baby girl of two. First, of course, was their mother; last, of course, myself. I was working hard to get the living according to our standard, and to save something. I was teaching, as private tutor, almost every day — working with preparatory boys from July to October or all the year; with college men from October to July. My work kept me busy from nine in the morning till midnight, with half an hour for lunch, and two hours for dinner. Several years of it had made me good and tired, and finally I decided to break the chain of circumstances which seemed to hem me in.

Early in October, 1905, I planned to rest for a week. My summer, the tenth in the harness, had been mighty long and hot. It was on a Saturday morning that I took the nine o'clock train from Boston for the New Hampshire hills. By noon I was at Franklin or Bristol or Danbury or somewhere there. In the afternoon a real estate agent was driving me about in a new world.

Yet not in a world wholly new, for I had seen something much like it before. Like many others of the middle class I was born in the country. During my boyhood and youth I was surrounded by old farms, hills and valleys, lakes, ponds, and woods. I did not realize how beautiful the environment was, although I knew there were uplands covered with big rock maples, and lowlands where the spruces, cedars, and tamaracks flourished. I knew, too, that there were sugar-parties in the spring, many wild flowers in May and June, hay fields in July, acres of ripening grain in August, good trout streams all summer long, partridges in the fall, and places to coast and skate in the winter. But I did not look then at these things with the eyes of a man who spends his days shut up in an office in the city.

Now the old world seemed new, for my eyes were open. My tutoring in connection with landscape architecture was one of the things which helped throw off the scales; the contrast between my city surroundings and the sights I was enjoying was another. There were, as of old, the rock-maple woods, but now not woods merely: they were great patches of glorious color — red, green, and gold. There were the hillsides, now covered with yellowing birches and blue-green pines; and ravines where hemlocks a century old overhung picturesque rocks, and swift, tumbling brooks. After the years, after the work, it all looked good.

Before I left the place I was the owner of an abandoned farm — 125 acres, 2,500 feet above Boston level.

The farm lies about thirty miles from Concord, to the north. It is south of Bristol and Newfound Lake, about six miles, and so high that it overlooks the lake, which is itself well up among the hills. We reach it by trains which leave Boston at 9 A. M. or 1 P. M., and land us at Bristol or Danbury in about three hours. From the station we have a five-mile drive, so beautiful that the hour goes before we know it, and we are at the farm.

On the south end of the place is a mountain side, with north slope, covered with big white and yellow birches, poplars, old white pines, red oaks, and spruces. Rocks are there too, but not visible from a distance. In a pocket at the foot of the mountain is a meadow of some six or seven acres. Along the west side of the place runs a low ridge, dropping gradually to the north, where there are thickets of young spruces and hemlocks between groves of maples and beeches. Along the base flows a brook, from a spring well up toward the south end of the ridge, down through a rocky, bushy pasture

in the lower southwest corner of the place. The central and eastern portion of the north half of the farm is open field. It rises gently to the west, and to the south half, which is less open and more rough. Down in the valley to the north, some two miles away, is a river, the roar of which we can hear when the water is high and the wind right. Beyond the river, up in the hills, lies Newfound Lake; and fifty miles farther north rise the domes and peaks of the White Mountains. Hills and mountains sweep in a great semi-circle about us from the west, through the north, to the east. The surface of the farm is well diversified, not only by hills, valleys, and gently sloping fields, but also by wooded and open spaces. Woods and bushy pastures cover about seventy-five acres, open fields about fifty acres. All this I bought for less than five dollars per acre. But there were no buildings; they had been burned the year before.

Having committed myself by purchasing the farm, I had to plan for a house. Just how I should manage to get away from business long enough to occupy it in the summer was another problem, the solution of which I deferred. Meanwhile my wife was growing interested.

Together we decided that the house must be of field stone and shingle exterior, rather low and broad, with large living-room, dining-room, kitchen, four bedrooms, and bath. We also wanted a good broad piazza along one side of the house and under the main roof. We wanted interior finish of wood, beamed and paneled; and, finally, a big fireplace in the living-room. From an architect we got a satisfactory embodiment of all our ideas, with a few more good ones, for $35.

This was in January. About the middle of February I took a Saturday, went to Danbury, and met a local mason and a local carpenter with whom I made arrangements for the work. They would undertake to do the whole thing by the day; they would buy everything, except the windows, doors, frames, and interior finish, at the lowest possible price and without commissions, and hire all the men. The mason was to have a commission of twenty-five cents per day on stone-layers, but nothing on helpers. The carpenter asked nothing but his regular wages. I trusted them absolutely, and my trust was not betrayed. I chose this mode of procedure because the city builders who figured on the job as a whole wanted $3,250. I thought I could do better. It turned out that the work cost me more, but I got something different, and I think something which will suit us better when we complete the work.

The local men got busy at once. The mason bought lime and cement, and hired a teamster to haul it from the station to the barn of a "summer" man who was good enough to offer me the use of it. This was at the end of February, when snow was on the ground. The carpenter, in March, bought his rough lumber, to be delivered as wanted in May and June. In April, during the Easter recess, I went to New Hampshire for a week. While there I decided upon the site for the house, and with the builders set the batter-boards. We kept close to the old site because the approach and the view were best there. Besides, the quondam farmer had dug a 50-foot well close by, one of the best within miles. Back home again, I bought the windows, doors, frames, and interior finish. No bills to be paid as yet, except lime and cement, and teaming. For these items I paid $175.

The house is low and broad, the first story of native field stone serving to tie it to the soil and make it seem a component part of its environment. East end of the house from the highway

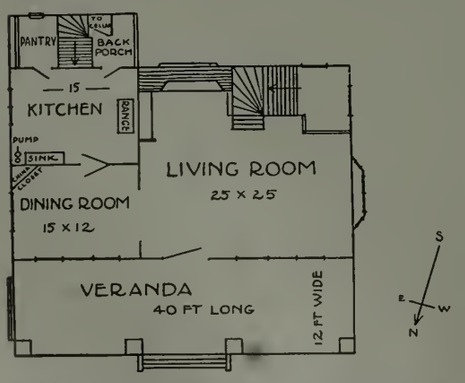
The masons began work on the 7th of May. On the 19th I ran up for a look and paid the first instalment of wages. The foundations and cellar were almost complete. May 31st saw me on the spot again. This time I headed off the mason who was trying to lay his rough field stone in regular courses. I paid more wages. On June 5th I paid the carpenters for work on sills and frames for doors and windows; on the 18th I took another look and paid the whole crowd. It seemed as though the neighborhood was out for my money. To make all these payments I had to borrow about $1,100 from myself. By the 2d of July the masons were through with their part of the work.

The carpenters then went at it in earnest, and I worked with them. I brought a plumber to the scene to put in kitchen range, tank in the attic, a force pump from the well, and a drainage system from sink, toilet, and bath. The mason had attended to all the ditching and to the outside sanitary work. The plumber was out within a week. The carpenters had things so far along that we moved in on the 26th of July. The house up to this point had cost me in round numbers $2,250. All bills, except those paid out of the $1,100 I advanced from past savings, were attended to out of current earnings. Including the amount paid for the farm, and for traveling expenses and entertainment in connection with my inspection trips in May and June, my total outlay was now roughly $3,000.

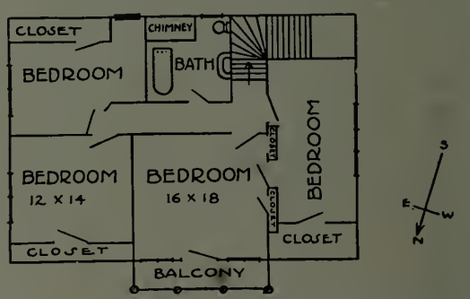
I shut up the office on the 1st of July, boldly taking the bull by the horns. It was perfectly clear that I could not get the family into the country for the summer, and give myself a vacation, unless I stopped the tutoring in the city. Of course all earnings for the time came to a sudden end. But one can't get on forever without a rest. No man can work all the time and do really good work. I find it possible to accomplish as much now in forty weeks as I formerly did in fifty-two. And I do a little with a boy or two at the summer place.

As I said before, we moved into the house on the 26th of July, 1906. We had sent some furniture, dishes, bedding, and table linen on ahead of us. Since the 1st we had been boarding at the hotel in a village five miles from the farm. Now we changed to semi-camp life. It was great fun, even though the wind whistled through the cracks on stormy nights. I worked with the carpenter finishing the exterior during the next month. His wages were $50. About the first of September we went back to Boston, leaving the carpenter to work out another $50. The last three days of September and the first four of October I spent on the farm, with men and team, moving the stone from the old barn wall and grading a little about the house. For this work, $20. Thus ended the first year. The total outlay was now about $3,250. Half of the sum came from past earnings; the other half from current earnings.

Since the first year we have spent the months of July and August at the farm. Each year we have done a little on the house and some landscape work about it. In April, 1907 and 1908, I worked for a week with a carpenter on the chambers, two of which are now finished—the smaller one in hard pine, the larger paneled and ceiled with cypress stained a grayish green, and floored with hard pine stained reddish brown. The latter we have furnished with antiques picked up at auctions or at farmhouses. In it we have a good bed, a mahogany bureau and sofa, some mirrors framed in mahogany, an old cherry table, four feet long with drop leaves, a birch sewing-table, and a chest of drawers for linen and bedding. There are also three fine old hardwood chairs. The cost of the whole lot was about the price of the bureau in a city antique shop. The expense of finishing the little chamber was about $50. The larger one cost three times as much.



The first floor rooms are few in number, but large. Note the noble dimensions of the veranda



Second floor plan. A suggestion for improvement would be the location of the chimney where it would serve for possibly three bedroom fires upstairs and for kitchen, dining-room, and living-room downstairs

For grading and seeding I paid $20 in September, 1907, and $12.50 in August, 1908. For cutting bushes in the pasture and on the meadow, $15. This brings the outlay, including furniture, up to about $1,500.

The planting of trees, shrubs, and flowers I do by myself in the summer, or get help for a day or two in the spring and fall. At the corners of the house, and by the veranda pillars, I have started some woodbine and wild grape. In beds, massed, are some high bush blueberries, spireas, meadow sweet, steeple bush, sweetbriar or eglantine, low bush honeysuckle, red wood lilies, yellow meadow lilies, meadow rue, false Solomon's seal, and, for borders, the low old-fashioned French roses — large red with yellow centre. Every August I set out thirty or more young pines, spruces, and hemlocks. They are doing so well that they will soon give a splendid background and setting for the house. Besides planting, I have laid some dry stone walls in connection with the approach road.

We expect it will take us another five years to finish the interior as we want to see it done, and to put the grounds in artistic shape. The expense for the interior will be at least $750. I may have to spend $50 more on the grounds. My own labor does not count, for that is part of the fun. In time we hope to build a small stable, large enough to shelter a pair of ponies, a carriage, hay and feed, and wood for the season. For this stable $675 should suffice. The cost of the whole place will then be in the neighborhood of $5,000.

You ask, and with reason, whether something less expensive would not serve the purpose equally well. We are satisfied to invest the amount named. The neighborhood is one appreciated by city folk who have nice places for summer occupancy. We have something which will not depreciate in value — there are seventy-five acres of growing timber, and a house with lower story of stone which will stand for ages. Besides, it will sometime be a gratification to our posterity. Had we accepted the city contractor's bid, the house would have cost less and would have been completed the first year; but we now should not have the pleasure of doing something each season; and the finish as originally planned was nothing but plaster.

You may be interested in the question of the vacation's cost. We pay for the two months about $365 more than we should if we stayed at home. Actual living expenses are cheaper on the farm; but the interest on the investment, the insurance, taxes, expenses of travel, use of horse and carriage for a month, and minor items bring the total to the amount named. We regard the cost as moderate. You can figure for yourself the expenses of a vacation of equal length spent in any other way — in boarding at a farm house, at a summer resort, in camping out, or in travel. As we do it the cost of clothing is in no way increased — and clothing is an item which means something to the habitues of fashionable resorts, and to travelers. When we work we wear our cast-offs; when we play we dress as at home.

Do we get enough out of it to make the scheme worth while? We think we do, because we like the life. It is not wildly exciting, but it's healthful and restful. We get fresh milk, cream, butter, eggs, vegetables, fruits, and meats from neighboring farmers or traders — all delivered at the door. During the first two weeks of July we pick all the wild strawberries we want; then we find blueberries in abundance; and later blackberries and apples. All these fruits grow on our own place. You can't buy anything of the kind in the city markets.

Each morning I devote twenty minutes to the force-pump, which fills the tank and gives us water for the day. After breakfast we ramble about the place, through woods and over fields, hunting for wild flowers or studying the birds; we do a little grading and planting; we go driving, hunting for old furniture or china; we go trout-fishing; or we stay at home and read. We always enjoy the sunsets and the evening song of birds; sometimes we get up for the glories of the dawn and for the morning chorus. All this may be quiet, as compared with the gaiety of summer resorts, but we have not yet had enough of it to find it monotonous. And we show the good effects physically. The children grow plump and brown of face, every eye clears, and we all get back the lost appetites.

Mountain woodland and meadow south of the house. Such timberland is in itself a savings account that can be drawn on indefinitely with proper handling

Nor is that all. We bring the country back with us to the city. Through the winter we talk of the past summers and make plans for those to come. The children brighten at the thought, their mother lives it over with them. When I come home late at night, as I always do, I put a stick on the fire, and after a time lose myself in fancy. Then I hear the summer winds blowing among the pines and beeches, the rattle of the hail on the roof, or the roll of the thunder among the hills, and I go to bed and sleep, the same refreshing sleep that comes to me in the country. I never tire of that sort of conclusion to the day's work.

An itemized statement of what the place has cost us is given below, but in connection with these figures it must be remembered that aside from the fact that the farm itself is a perennial source of enjoyment and interest to the whole family, it provides for our vacations for all time to come, and furthermore is a good investment from a financial standpoint.

Cost of farm, including agent's commission	$ 550.00
Plans and specifications	35.00
Lime and cement	165.00
Masons, including excavations, drains, etc.	925.00
Plastering kitchen and bathroom	25.00
All freight charges and cartage	50.00
Rough lumber	362.50
Doors, windows, frames, casings	200.00
Flooring	100.00
Interior finish, pine and cypress	125.00
Shingles, best cedar	147.50
Carpenters	300.00
Plumbing, including kitchen range	200.00
Hardware	50.00
Furniture, dining-room, and kitchen outfit	275.00
Tools, wheelbarrow, etc.	15.00
Amount expended to date	$3,525.00
Estimated expense of finishing and furnishing interior	$ 750.00
Estimated expense of putting grounds in shape	50.00
Estimated cost of stable	675.00
Total outlay for a place such as we plan	$5,000.00

Let me urge you whose needs are like mine, to buy a place like ours. You need not farm it, though that might add something. Own it; go to it in the spring or fall for a week, and for two or three months in the summer; fuss with it, improve it, enjoy it. There's health in it; and there's a wealth of compensation every day of the year. And incidentally you will be establishing a homestead for your old age, and for the generations to come.

Spruces down in the pasture northwest of the house — an ideal playground for the children

A large outfit for a camping-tour of several days includes many necessary items packed in surprisingly small space

Savory odors from the meal prepared in this impromptu kitchen were beginning to attract the men folks of the party

AN AUTOMOBILE CAMPING TRIP

By RYLAND P. MADISON

SOUNDS formidable, doesn't it? Well, it isn't, and experience has proved it to be one of the most pleasurable and inexpensive of vacations — once you have the car. Many a young man of otherwise unblemished character has mortgaged his home and "hocked" the family plate to secure one, but that is neither here nor there. I write of the use of the car and not of procuring it.

The joy of a camping tour lies in being kept constantly in the open and among friends, for it's a game you can't play alone, and wouldn't want to. Then, too, you can travel where and as far as you will — thirty or one hundred and fifty miles a day. If you dislike the neighborhood, a day's run will often place you in another state. Best of all, there is no worry about good hotels. Fertile farming country for night camps is all you need. This may be found on a trip from most any city. Consult your Blue Book, and a few minutes' time will discover a suitable route quite as pleasing as ours from Cleveland to the Canadian shores of Lake Ontario.

Shaving presents no terrors when one is screened by the car and has water heated over an alcohol stove

In selecting the party, congenial dispositions are essential, for all will get a tremendous lot of each other's society. Preferably leave all servants at home, or at most take only the chauffeur. The ideal party consists of two couples, the women knowing how to cook, and the men understanding the car.

Equal care must be taken in purchasing a camp outfit. For our trip, we found that the following list filled every requirement and was easily packed on the car.

One canvas tent 8¾ feet square.
One A tent 8 x 10.
Four folding stools and cots.
Blankets, ponchos and pneumatic pillows.
Two waterproof duffle bags.
Canvas water bottle.
Folding water bucket and basin.
Two hatchets and a clothesline.
Aluminum cooking set.
Alcohol stove and fuel.
Two vacuum bottles and refrigerator basket.
Two electric flash lamps.
Camera and tripod.
Fishing tackle.
Canned provisions, coffee, sugar, etc.
Tarpaulins, assorted straps.

Our personal baggage was kept down to the least possible amount. Two double suit-cases rode on the luggage carrier and two large duffle bags were placed in front of them. We also carried a tool outfit, including a spade, hatchet, pick-axe and a coil of strong rope; also the usual repair outfit for car and tires.

It was on a doubtful July day that we started from Cleveland Ohio. The outfit described, weighed 250 pounds and none of the party was a lightweight, but the car bowled smoothly along through Summit and Stark counties into the delightful Tuscarawas Valley. A secluded schoolhouse yard was our lunching-place, and at Massillon, we replenished the refrigerator basket and filled the vacuum bottles preparatory to camping for the night. Near Beach City, we found a delightful spot for our tents in a grove and were soon partaking of a welcome supper, spread upon a folding cot for a table.

The following morning, we were up with the sun, our hunger keen for the delicious breakfast of ham and eggs and coffee prepared over our trusty alcohol stove. Soon afterward, we broke camp and continued our journey. The roads were good and we soon passed through Canal Dover, New Philadelphia, Coshocton and Dresden. Lunch was served near the bank of the canal, and our camp for the night was pitched in a newly mowed clover field. The owner readily gave us permission to pitch our tents, and of him, we bought eggs and milk.

Early the third day, found us speeding through Zanesville and Newark to Columbus, where we had lunch at a hotel. It was a good lunch, but not in keeping with the spirit of the trip. Things did not taste so good as when eating in the open, and we resolved thereafter to confine ourselves to the picnic lunch, supplemented by the products of the alcohol stove. Onward, we proceeded along the National Highway to Springfield, near which we camped in a meadow, where we were welcomed with heavy rain which, far from dampening our enthusiasm, rather increased it, especially because of the superb behavior of our car over the seas of mud between Dayton and Cincinnati the following day. Just about as the rain stopped, we camped on a knoll overlooking the White Water Valley.

On the fifth morning, the Indiana line was crossed and we enjoyed good roads to Indianapolis, where we spent an uncomfortable, hot night in a hotel, resolving then and there, not again to desert our cool tents and comfortable cots.

At Rochester, we camped on a wooded knoll near a sparkling spring, which flowed into a beautiful little lake. The fishing proved so good and the spot so charming that we had not the heart to leave it for two nights and a day.

Upon leaving this camp, we continued through South Bend into Michigan to a camp near Eagle Lake. Here we had more rain during the night, but not a drop came through our tents. As we were spinning along toward Ann Arbor, the next afternoon, a heavy thunder storm suddenly overtook us. It meant hustling to apply curtains to the car and make for the nearest meadow, where we barely succeeded in raising our tents before the storm broke.

Our next camps were in Canada. The first

(*Continued on page 76*)

Two nights and a day were happily spent in this delightful woodland camp near a lake famed for its fishing

Looking back from Palmer's Hill. The road is far steeper than it appears in the picture but not steep enough to embarrass the motor-cycle

Along the road. The scenery even in the foothills is charming, and the roads generally are good — a necessary adjunct to a successful motor-cycle trip

A MOTOR-CYCLE VACATION

By GEORGE M. JOHNSON

Photographs by the author

HAVE you ever experienced the joys of the motor-bike? Do you know what it means to throw your leg over the saddle and spin off down the highway, carefree as a mallard in close season? If you do, accept the congratulations of a fellow enthusiast who has also found this new road to bliss; but if not, hie away to the nearest agent and get a ride on his demonstrator.

You perhaps own an automobile, which you use for business and pleasure. And several times you have undoubtedly sat up and taken notice at the ever-increasing bills for tires, repairs, gasolene, oil, and more tires. Or you may belong to that large class of those who would like to own an auto but can't afford it. The answer to both puzzles is simply this: buy a motor-cycle. The two-wheeler, in its present state of development, is fully as reliable as its big brother, is even faster and can be run at a very, very tiny fraction of the cost.

Speaking of speed, who holds the world's record for annihilating a mile of space?

"Why, Barney Oldfield, of course," I hear you answer. "Didn't he do a mile in 27.33?"

That's all right, but it's a bum guess, just the same. Mr. Oldfield does not hold the record, but a gentleman named Curtiss, sometimes mentioned in connection with aeroplane work, does, and his mile was done in 26⅘ seconds *on a motor-cycle*. Figure that down to m. p. h. and it reads a trifle over 136 miles per, which is certainly some traveling. But the average rider cares little about speed. He wants a machine that will plug along day after day over good and bad roads without lying down on the job, and that's only what almost any up-to-date motor-bike will do.

Now before describing a little tour which it was my privilege to take last season I purpose to dwell briefly on the question of motor-cycles in general. If you know all about them you're welcome to skip this, but if you are actually contemplating the purchase of a machine, a few pointers from a rider of some experience may not be amiss.

The objections most commonly urged are, that the machines are dirty and dangerous, noisy and "vulgar." Furthermore (say the critics) they joggle the rider so terribly that serious physical disorders are sure to be caused; they frighten horses into running away; and lastly, they are dangerous to the riders and every one else because constantly liable to "blow up."

The above constitute all the arguments I have ever heard brought against the motor-cycle and I've had the pleasure of hearing some pretty rabid people express their opinions. The machines are not dirty if decent care is taken and an occasional cleaning is given, and they are noisy only at the choice of the rider. The noise part comes from riding with the muffler cut out, and this is prohibited in most cities; in addition many manufacturers are now making the machines with "cut-outless" mufflers realizing the harm done their business through public prejudice against the noise. Of course, you never heard of an auto driver opening his muffler and making a noise like three score and ten motor-cycles run amuck! No indeed! Auto drivers are always gentlemanly and never do anything that could in any way annoy the dear public! If a motor-cycle is driven over a dusty road both machine and rider pick up some dirt and dust, but is any kind of travel — save by ships, water and air — especially conducive to cleanliness? The early machines were truly dirty; that is, the engine threw a considerable amount of oil and grease over the rider, but this is largely a thing of the past.

"Motor-cycles frighten horses." Perhaps they do sometimes, but how about automobiles? In point of fact, I have yet to cause a runaway through frightening a horse with my motor-cycle riding, and in the past two seasons have covered seven thousand miles.

Now as to the "joggle." The first machines, built with short wheelbases, high frames, no springs or spring forks, and with a pad of hard leather for a saddle, were doubtless uncomfortable and "joggly." Since that day, however, all motor-cycles have departed widely from bicycle lines, for the early machines were really nothing but a heavy bicycle to which was strapped an engine. There is now a large springy saddle in a low position — so low in certain models that the rider can easily touch the ground with both feet — some style of spring fork or even spring frame, which absorbs most of the road vibration, and spring grips on the handle-bars. A common but erroneous idea is that there is a considerable degree of vibration from the engine. On the contrary, practically all the vibration is from the unevenness of the road, and even when driving the motor at a terrific speed, say 2,500 revolutions per minute, or about forty to fifty miles per hour, the vibration transmitted from the engine is hardly noticeable, so far as causing any discomfort. The road "joggle," the only one to be considered, is not present on a good road, and on a rough road is largely taken care of by the spring forks, spring saddle, and spring grips.

The up-to-date motor-cycle is a radical departure from the old-time springless model, with its short wheelbase, high frame, and pad of hard leather for a saddle

As to that last objection, that a motor-cycle is liable to blow up, no one who knows a thing

about gasolene engines would make so absurd a statement. Motor-cycles, like automobiles, are dangerous — when driven recklessly. Guns are dangerous — when pointed at human beings. Horses are dangerous—when so skittish as to be frightened without cause. Fishing is dangerous — the boat may upset and the angler be drowned. Almost everything is dangerous under certain circumstances, but the serious accidents from motor-cycle riding are too few to notice, nearly all of them happening in races or where the rider is inexcusably careless.

Now coming to the motor-cycle itself, we may glance for a moment at the engine, the heart of the whole machine. Here we have a choice of one, two or four cylinders, giving from about 2½ to 8 horsepower. The novice should begin with a single, preferably of 3 to 4 horsepower, as that will give all the speed any reasonable person could desire and will not fail on any hills likely to be met. The twin or two-cylinder engine, is needed if the rider lives in an exceptionally hilly country or if he desires more speed than forty-five miles per hour. If a side-car is to be used the more powerful twin is necessary to carry the increased weight, but the heaviest and most powerful machines are always the most difficult to manage.

The transmission is a point which furnishes material for endless discussion, usually more or less profitless. Three types are offered: chain, belt, and shaft. In the belt-drive there is a choice of flat leather belt and a rubber or leather V belt, run in V-shaped pullies.

A Catskill "knoll." All through this section is an abundance of small game

The chain-drive has many advocates, yet perhaps does not enjoy so general favor as the belt, though many excellent machines, both here and abroad, are fitted with this drive. The shaft drive has until lately been used only in connection with four-cylinder engines. This drive is, of course, on the same general principle as that of the chainless bicycle, power being transmitted by means of a shaft and gears. It is needless to enter here into a discussion of the advantages and disadvantages of the various types of transmission. All are good and the purchaser cannot make a serious mistake, whatever type he selects.

Almost every year it seems incumbent upon me to take a little flier from my Connecticut headquarters up into central New York, where sundry specimens of Fontinalis have accommodatingly avoided capture all through the season for my express benefit. One day, while preparing for this particular season — bing! a brilliant idea struck me square on the think tank. Why not go by motor-cycle? I couldn't find any answer to that question and so it was settled.

My folks, as usual, began throwing cold water, but as the weather was warm, not to say sultry, that didn't bother me worth a counterfeit copper.

"You won't get through," they kindly informed me. "Something'll surely break down, and then what *will* you do?"

The motor, leaning against a clothes post in the back yard, looked positively sick at these unkind words, but brightened up a bit as I retorted indignantly.

"Break down, huh! Well, when has she ever broken down before?"

That remark was a ten-strike, and the only response was a feeble mutter to the effect that there's always a first time. Without more palaver, I dug out an ancient road map and began to make computations. Two hundred and forty miles I figured it. Down the Connecticut shore road, through White Plains to the Hudson, thence up the river to Poughkeepsie or thereabouts and then cross country to the headwaters of the Delaware. It looked good to me.

A glimpse of the Hudson from the Old Post Road

I made a start one beautiful morning in July and didn't have a particle of trouble until I was fully three city blocks from home. Sand, as you may or may not know, is the worst thing the motor-cyclist can strike, and as I was just beginning to open her up I biffed into a deep patch of this material where some road repairing was going on. It was still pretty dark, and I couldn't see what I was up against until too late. The heavy suitcase on my luggage carrier helped to overbalance me, and I found myself embracing old Mother Earth. It was a close call from bending the front forks, but motor-cycles are built to stand a lot of rough work and so we soon sped on unharmed.

Mile after mile was buzzed off by the purring motor, and I defy you to produce anything more enjoyable than that superb morning's ride. After the first spill I had absolutely no further difficulty until nearly over to the Hudson. Just this side of Tarrytown they were oiling the road — literally drowning it—and as for riding through the mess — I was fortunate in being directed to another road which took me safely into Tarrytown, though I carried along on my machine and self indubitable evidence of the oiled surface.

I stopped in historic Tarrytown long enough to tank up with gas, and then hit the trail up the old Albany post road along the Hudson. Everything was running finely and I felt at peace with the world. Presently I came to a twin cylinder motorcycle on its stand by the road, the rider glumly regarding it with an eye of evil. Now no motor-cycle rider ever passes a brother in trouble on the road without stopping to offer assistance. Accordingly I shut off power and inquired if he was stalled. He responded in the affirmative.

"What seems to be the matter?" I continued.

"She won't go," was his naïve response. Then he went on to inform me that one of his cylinders refused to fire, though he didn't know which one it was or wherefore. He also added that he was new to the motor-cycle game.

I'm not a gas engine expert by any means, but it was only a matter of a minute or two to discover that the trouble was merely a cracked porcelain in one of his spark plugs; as soon as a new plug was fitted his motor ker-banged like a veteran. He was taking a run up to Albany and so we continued in company. After covering some miles, that vague hunch which often suggests an unexpected trouble or danger began to tell me that we were off our road, and on inquiry we found this to be true. Then a strange thing happened. We both turned our machines around to retrace our path according to the directions given, myself in the lead. I rode on back, expecting every moment to hear the chugging of the other machine behind me, but it didn't appear. I found the right road and then waited a few moments for my new acquaintance, after which I proceeded slowly, thinking that he might catch up, but never again did I meet the rider of the twin. Whether his engine stalled him again or whether he was simply tired of my company I do not know; at any rate, he vanished as far as I was concerned.

At Peekskill I stopped for a bite to eat and a fresh supply of gasolene. Here another motor-cyclist told me of a short cut whereby I could strike a fine road to Poughkeepsie, but I confused his directions so badly that on coming to the road in question I turned the wrong way, and went spinning along at thirty-five miles an hour away from my destination. On learning of my mistake I reversed and hit the back trail even faster to make up the lost time. It was not far from Poughkeepsie that I saw a tattered flag gaily fluttering in a field and nearby an inscription in glaring letters, "Curtiss landed here." A Poughkeepsie rider gave me some welcome information concerning my route after leaving the river, and following his advice, I continued on the Albany road to Rheinbeck, where I crossed the Hudson, incidentally waiting an endless time for the ferry to condescend to take me over. It was then quite late in the afternoon and I pushed rapidly on, struck by a sudden desire to accomplish many parasangs ere nightfall. I followed up the west shore of the river to Saugerties, branching off from there for the cross state run. Then came more newly oiled roads; in fact, I passed the cart which was

(*Continued on page 88*)

Where wings would help — ferrying across the Hudson at Rhinebeck

GARDEN & GROUNDS

CONDUCTED BY THOMAS McADAM

BROAD-LEAVED EVERGREENS FOR LIMESTONE DISTRICTS

IS THERE any way by which we can have broad-leaved evergreens in a limestone country?" asks a reader. "I feel sure your help would be appreciated by many in Virginia, Pennsylvania, New York, North Carolina, Tennessee, Kentucky, and Illinois. Here in the valley of Virginia we have splendid box, but is there no substitute we can use for rhododendron, mountain laurel, azalea? Are we to be debarred from the effects obtainable only with the soft, loose-growing evergreen shrubs? Box is good, but not very good around house foundations. Also can you tell us what we have in America that most nearly approximates the 'laurel' and 'laurustinus' that make great pudding-shaped domes in old English gardens?"

It is perfectly practical to have a bed of lime-hating evergreens in a limestone district, simply by removing three feet of soil, and substituting soil rich in peat and free from lime; and you should use rain water. Mr. John Dunbar, of Rochester, N. Y., and others, have proved beyond a doubt that you can grow rhododendrons, mountain laurel, and azaleas in this way. Doubtless this method will apply to other evergreen members of the great heath family (*Ericaceæ*), *e. g.* mountain andromeda, everblooming daphne, heaths, Galax, shortia, bearberry, wintergreen, partridge berry.

But for planting on a large scale it is bad art to do this sort of thing, even if one can afford it. The ideal policy in a limestone country is to plant heavily the species which nature has adapted to lime by experiments covering myriads of years. Box is a famous example of this; and holly, according to Dallimore, will thrive in soil containing an abundance of lime. American holly seems to me the noblest of all our broad-leaved evergreens. Why not make that a dominant feature and use it in many ways; why not trim it like a bay tree and produce a new, American decorative plant as far ahead of the bay or classical laurel (*Laurus nobilis*), as day is ahead of night? Remember that English holly is pruned into every conceivable shape to harmonize with architectural details, and consider the winter glory of American holly on your terrace, while the bays are sulking in their sheds. And, in this way, you can get rid of unsightly tubs.

The "English" laurel of which you speak is the quickest grower, and has the broadest and shiniest leaf of the evergreens. It ought to be called the laurel-leaved cherry, for it has no relation to the classical laurel or mountain laurel and is simply an evergreen cherry. There are several varieties native to Japan and the Caucasus which are hardy as far north as Washington, D. C., and the hardiest of all is the Schipka Pass laurel which survives the winters near New York but is sometimes disfigured. Look for it in catalogues under the name *Prunus Laurocerasus*, var. *Schipkaensis*.

Our American equivalent is *Prunus Caroliniana*, beloved in the South under many inaccurate names—wild orange, mock orange, wild peach. A better name would be evergreen cherry. I have seen this lovely tree luxuriating at Charleston, S. C., where the soil is said to be too limy for azaleas. Unfortunately, it grows wild only as far north as the Cape Fear River. It might be hardy with you, but would it be evergreen and unhurt?

The best way for you to solve this problem might be to take an automobile ride to the largest old nursery in a big limestone valley, and on the way visit the oldest country places and gardens, asking everywhere about the most important species, which, in addition to the above are as follows: trailing myrtle (*Vinca minor*); fire thorn (*Pyracanhat coccinea*); climbing euonymus (*Euonymus radicans*); hardy yucca (*Yucca filamentosa*); Japanese holly (*Ilex crenata*); Oregon grape (*Berberis Aquifolium*); Japanese mahonia (*Berberis Japonica*); English ivy (*Hedera Helix*).

The ideal way to discover all lime-lovers or lime-haters would be to have a horticultural survey made by trained investigators and photographers.

W. M.

GO TO THE PEONY SHOW

EVERYONE who has the chance ought to go to the national peony show at Philadelphia in June. This will be one of the great floral events of the year. The ideal way to select flowers for one's garden is to see the flowers themselves, and place orders then for future delivery. In this way you can discover the latest improvements, match colors, and keep your garden free from discords. The American Pæony Society will hold its annual meeting at the Pennsylvania Horticultural Society's Building on Broad Street below Locust. This admirable society has held exhibitions at Chicago, Boston, Buffalo, New York, and Ithaca. For further particulars and dates write to Mr. S. M. Meehan, Germantown, Pa.

Moutan or tree peony. This class has larger flowers than the herbaceous kinds, but is harder to grow and is not always long-lived

Madam Breon, a favorite peony since 1850, when it was introduced by Guerin. Now is the time to see new colors and forms among peonies

THE NATURE CLUB

Conducted by Julia E. Rogers

This is the month of a wonderful insect pageant. Cicadas that have been slowly developing for seventeen years will come out of the ground by millions, fly among the trees and shrubbery of our gardens and orchards and forests, fill the air with their piercing notes, and enjoy to the full their few weeks of life in the sunshine. It is the nature student's opportunity, for two great broods, one Northern, one Southern, appear at the same time. The Director will gladly help each reader of this page to find out all he can by personal observation. What no man has ever seen before may be revealed to you!

OUR LONG-EXPECTED VISITORS

WHO HAS seen the first "seventeen-year locust" in 1911? Before any one thinks I like that term, let me abandon it for the correct name, "periodical cicada." Locusts are grasshoppers. Cicadas are very different. These are American insects. They were here before the white men came. Indians warned the Pilgrim Fathers when to expect them. The old error in name grew out of the supposition that these swarming insects, which the Indians roasted and used as food, must be the same locusts that come in migrating swarms into various places in Northern Africa and Eastern Asia, where they are collected and eaten.

The two kinds of cicadas. 1. The two-year cicada, or dog-day harvest-fly, is the common black and green cicada, whose "reedy note" sounds through the tree tops during the hottest hours of the hottest summer days. It requires but two years to "grow up," and as there are two broods of this insect, one coming forth each summer, we are never without this music.

2. The periodical cicada is brownish in color, with yellowish legs and wing-veins. The largest are 1½ inches long, with wing-spread of 3 inches. A form of smaller size and darker colors occurs in the same swarm, North as well as South.

The cicada is represented in the United States by two races, one of which takes seventeen years to complete its life cycle — to mature; the other requires but thirteen years. The slower race lives north of 35° north latitude, the other south of this line. Nobody can distinguish the insects of the two races by examining specimens; they look just alike. The longer growing season in the South has probably brought about more rapid development.

Two big broods come out this month. This year, "Brood II" of the seventeen-year race, and "Brood XXIII" of the thirteen-year race, appear together. Each is an unusually large brood, covering many states. The two will not appear together again until the year 2132. When did they last coincide?

Brood II has been reported regularly every seventeenth year since 1724, by scientific observers in Connecticut. In New Jersey, every emergence has been recorded since 1775. The brood covers a strip of territory reaching from Albany straight through to Richmond and northern North Carolina. It takes in the western half of Connecticut, all of New Jersey, eastern Pennsylvania, and the middle third of Virginia. Easterners live closer together than people in other parts of the United States. Thousands will see the seventeen-year cicada this season, and will wonder and ask questions about it. Some people will remember the same brood that last appeared in 1894, over the same region, for broods are stationary.

Seven close nests of the cicada, showing damage to the twig

Brood XXIII covers the lower half of the Mississippi Valley, including only those states that border on the river. The northern limit is the line between Iowa and Missouri, and takes in the lower half of Illinois and Indiana. The western half only of Kentucky and Tennessee is included.

The coming of the swarms. About the fifteenth of May should mark the beginning of the emergence of cicadas of Brood II from the ground where they have been concealed for the past seventeen years. They come with a rush. The parents of this same brood began to emerge on Staten Island on May 15, 1894. The insects may be two feet below the surface, where mellow soil is as deep as that. Usually they lie between six and twelve inches below the surface, each in a smooth-lined cell of hardened earth. This is the slim, wingless pupa, with great burrowing claws on its front pair of legs. With these tools it digs its way up to the light. Often a chimney of earth pellets, a leaning tower two or three inches high, is built, and the pupa climbs to the top of this, and lies there until it feels impelled to break a hole through the wall and escape from it. Often no chimneys are made; the pupa comes out of a hole in the ground.

The impulse to climb is the first one; a grand rush is made by the now very energetic insect to get to the top of the nearest bush, tree, or post. Here the old garment of skin is cast off, and the wings are released and spread out for the first time. The insect reaches full development.

The cicadas come out by night. Between sunset and midnight, thousands come forth, under a great white oak, we will say (for that is a favorite tree with these insects), and every one will climb up the trunk of that particular tree. Reaching a leaf or twig that offers good foothold,

(*Continued on page 78*)

Pupa ready to cast his skin — The hardest job — the head drawn out — The last big effort — After the struggle

STOCK *and* POULTRY

CONDUCTED BY DAVID PHELPS

THE ARISTOCRATS OF THE GOAT FAMILY

OUT on the Pacific Coast people are making a success of raising goats — not the kind that are always seeking an opportunity to give you a boost in the world, but the gentle, sleek, fawn-like Toggenburgs that give so much rich milk and make such delightful pets. The Toggenburgs, you know, are from Switzerland, and are to the goat family what the Jerseys are to the milk family of cows — the aristocrats of the race. The great value of Toggenburgs is that they combine splendid milking qualities with an intelligent and kindly disposition when properly handled. They are beautiful creatures that women can handle, or manage. Recently a man bought some young Toggenburgs to start a small herd for his daughter to look after. He would not think of her taking care of a cow, but he knew that these were animals that could be easily handled by women or children.

People who own Toggenburgs say that there is never any trouble to sell the milk; in fact, the chief difficulty is to get enough to go around. It is so agreeable and palatable for babies and invalids that it is always in demand. The prevailing price seems to be twenty-five cents a quart, never less, but sometimes more. A full-grown goat will give from three to five quarts a day and ordinarily where they are kept on not too expensive land, they can get along nicely at a cost of about five cents a day. The milk is fully as rich as Jersey milk and runs as high as 7 per cent. in butterfat. The nice thing about giving it to a baby is, that when the family goes away the milk supply can be taken along also. "Nanny" can be put in a crate in the baggage car and "Snookums" need not vary a particle from the regular menu, nor will there be any fear of the long train of ills that follow in the wake of a change of milk for the baby.

Then you can make most delicious cheese from the whole sweet milk that would cost about $1 a pound if you had to buy it at the store. This cheese is not only very nutritious and easily digested, but has a delicate flavor that is most appetizing. It takes about four quarts of milk to make a pound of cheese.

Thoroughbred Toggenburg does. They cost little to keep and will live on pasturage too poor to support any of the other domestic animals

The most money in the goat industry is in selling the young goats. A young thoroughbred Toggenburg goat, weaned at five months of age, is worth $75; and the grade doe of the same age is worth from $15 to $35, according to the individual. But the most encouraging feature of the whole business lies in the fact that the goats are scarce and hard to get. As it is with the milk, there are more buyers than goats. One of the largest breeders in the West answered over two hundred letters last year inquiring about goats. He cannot begin to fill all the orders he receives. He had an inquiry not long ago asking for his price on a carload, and a physician from New York State wanted his figure on fifty head. There is practically an unlimited field for the sale of good milk goats in the United States, on account of the supply being far below the demand.

One of the common mistakes made by many who start in the business and are ambitious to make all they can out of it, is to breed the does too young in life. The most successful breeder in this country — the man who has the best stock and has the best name as a breeder — says that he never breeds the does until they are two years old. That insures size and development. Another mistake is to wean the kids too early. Some breeders wean them as early as two months of age. If you expect to derive the best results from your young goats they should be given all the milk they want until they are four or five months old. The secret of producing a stout, lusty animal is to feed it well, especially during the nursing period, so as to promote and insure development.

If the goats are well bred and are given care they will be good milkers if properly handled. Just to show the possibilities of these little animals, one of the well-known breeders

Swiss Toggenburg doe "Fanetta." She gave 1709 pounds of milk in eleven and one-half months. Does of this breed are gentle and easily managed

"Prince Bismark," an exceptionally fine example of the type of Toggenburg needed to build up a herd. He is built like a bison and weighs 200 pounds

in this country, owns a goat that gave 1,709 pounds of milk in a year. She gave nine pounds and ten ounces in one day — or five quarts of 7 per cent. butterfat milk — and only weighed 135 pounds at the time.

James E. Downing.

A THREE-ACRE POULTRY PLANT AND A LIVING

WHEN my friend, Mr. Henry Bishop, of Delaware County, N. Y., claimed that last year he cleared $2 per hen on a flock of 200 White Leghorns, and backed up his statement with a balance sheet, I wanted to find out how he did it, and accordingly I spent a day in his company looking over his poultry plant.

Mr. Bishop is a retired business man and when, finding time hang heavily, he turned to the raising of chickens as a pastime more than anything else, he brought business methods to bear on his poultry venture, which may account for his success. He started with a few hens, studied them, and soon learned to care for them scientifically. Then, having time and means, he decided to invest in the equipment needed for 200 hens.

He built two laying houses, each 10 x 30 ft., which are divided into three sections — one for roosts, one for a scratching floor, and one for a dust room. The floor in a section of the house, about 10 x 12 ft. square, is covered several inches deep every fall with fresh soil. In this place the whole flock of 200 hens can take their bath together. When asked how he destroyed lice in his houses, Mr. Bishop said he never had any to destroy. The hens when taking their dust bath, fill the whole house with a cloud of dust, and lice can not live there. The floor of the greater part of the house is covered with litter in winter, and the hens are kept busy nearly all day scratching for grain. The conditions for the hens in winter are as nearly like those in summer as possible. The houses, which face the southeast, are warm, having large windows in the front that let the sunlight into every part of them. The windows are provided with shutters that can be closed over them on cold nights. The interior of the houses are whitewashed, and everything about them indicates cleanliness.

The laying hens in winter are fed whole grain, such as whole wheat, corn, and buckwheat, which is covered with litter so that the hens must exercise to get it. Once a day they are fed a warm mash composed of one-third each corn meal, ground oats, and wheat bran, but only enough partly to satisfy them. Cooked meat is usually given the hens every two days, and both commercial shells and grit are supplied.

A section of one house is used for cooking meat and for keeping and mixing the food. In it there is a large stove and kettle cast together. When skim milk can be obtained it is always given to the hens to drink. The maturing pullets are fed the same ration as the laying hens. At first the young chicks are fed oat flake, and milk when possible, and as they grow older, cracked corn and wheat. In summer the green food for all the fowls is grass, and in winter cabbages and other vegetables. Alfalfa meal is fed to some extent and with good results.

One of the houses for chicks and pullets not ready to lay. These are better out on a range, and separated from laying stock

Mr. Bishop keeps White Leghorns mostly, as these lay a pure white egg. Part of the flocks are pure breds. The eggs are shipped to New York once a week, and a special price is obtained for selected eggs. Supplies are bought in quantities and at lowest prices.

In a suitable room in the house, a 240-egg incubator is used. Eggs are put in it early in March, and the first chicks come out about the first of April. These are taken to the brooder house and put in a brooder. The chicks are strong enough in a few weeks to move from the brooder to the section of the house that is heated with a stove under the floor. By midsummer they are large enough to remove to a house built for the young pullets and cockerels, where they can be separated and each fed separately in the best way to mature the pullets for laying and the cockerels for market. In the fall the pullets are ready to go in the house for laying hens. One brood of chicks follows another in this way, from the incubators to the houses for layers, until June, after which time no more eggs are set.

Mr. Bishop's plan is to be recommended, as all experienced poultrymen know that it is not the best way to keep laying hens, young pullets, and cockerels together in the same house.

Mr. Bishop's chickens know him and his quiet ways and are disturbed by any one else. Gentleness reacts on animals and they respond to it by greater activity and production.

I think there is little more than one acre of level land in that part of the place devoted to the residence, barn, and poultry houses. Besides this there are about two acres of tillable land, and two or three acres of rough waste land used for chicken runs and pasture. Altogether, less than three acres are devoted to poultry. The buildings and land together represent an investment of $3,000.

A family cow is also kept and the land provides nearly enough food for her. The fruit and vegetables, milk, butter, cream, eggs, fowls, etc., produced on the place, with the net cash returns from the poultry, fruit, etc., make a very good living.

The following is an itemized statement of receipts and expenses:

RECEIPTS

Eggs sold at market prices	$436.00	
Eggs for hatching	105.00	
Fowls sold	79.95	
Manure sold	9.40	
Value of fruits and vegetables	200.00	
Value of milk products	75.00	
Total		$905.35

EXPENSES

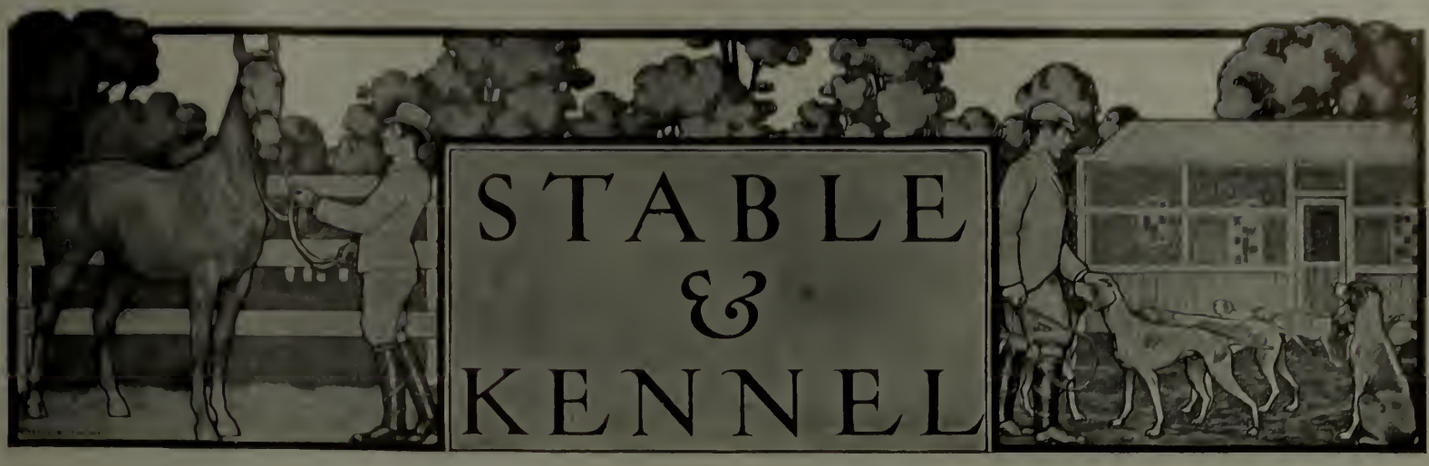
Grain purchased for poultry and cow	$200.00	
Interest on an investment of $3,000 at 5 per cent.	150.00	
Taxes and insurance	25.00	
Total		$375.00
Leaving a net profit of		$530.35

Mr. Bishop has demonstrated what it is possible to do on a very small area, and this should be of interest to others who may be in greater need of the returns than he is.

W. H. Jenkins.

House for laying hens. The poultry plant is mostly on the rough, untillable portion of the place, and this being partly waste land reduces the investment

Brooder house. The brooder under the shed is for small chicks just from the incubator. The enclosed part of shed has bottom heat and is for larger chicks



CONDUCTED BY R. A. STURDEVANT

EDUCATING THE COLT

THERE is a fascination in the work of training a young colt which can be appreciated only by one who has taken a well-bred equine youngster and watched him get accustomed to halter, harness, wagon, and saddle, and eventually become a trained, useful, and affectionate friend. There is a vast difference between breaking and training a colt. By the former method it may be subdued and made to obey the will of its master, but a horse so trained is seldom trustworthy, since it obeys simply because it fears the penalty of disobedience.

A colt's education should begin in infancy and the first lesson should consist of getting acquainted; he must get accustomed to seeing and having you around and discover that you are a friend to be trusted and not a creature

A colt gains confidence and learns a lot from seeing the dam handled

to be avoided if possible, and to be kicked at when escape seems impracticable.

It is a good plan to put a halter on the colt when he is a day or so old — one without a lead attached at first. The halter should be put on and taken off frequently, and the colt will soon learn that he can be held by it and made to move around at the will of his master. The first time he is tied up be sure that your lead is strong and that he is fastened where he will not be likely to injure himself. Teach him to stand quietly in a stall; to back out nicely; to "get over" when commanded; but do not leave him tied up too long at a time at first.

The average colt at first usually objects to the harness; it should be gently but quickly put on and fastened, and so firmly secured that no amount of bucking or kicking can shake it off.

In training a colt a whip is seldom necessary and should be used only when you are sure the occasion would seem imperatively to demand it, and then in such a way that the colt will understand what the punishment is for.

Before the colt is hitched to a vehicle of any kind, he should start, back, or stop at the word, and do it willingly and promptly.

H. Wilbert Class.

TO KEEP A HORSE IN CONDITION

THE stomach of the horse is smaller than that of most animals, in proportion to his size, and his digestive system requires food that is abundant, wholesome, clean, and sweet, and regular hours of feeding. He should be fed and watered at least three times a day.

To horses that are to be used immediately after feeding, food of a concentrated kind such as oats or corn should be given an hour or more before going out, and bulky food like hay should be withheld.

While the horse's stomach is proportionately small, its capacity for water is almost phenomenally great, hence the rule of watering before feeding should be adhered to. Other reasons exist for the observance of this rule. The proportion of water in the blood is 750 parts in 1,000, and an enormous quantity is required for the secretion of the gastric juice. The amount of this digestive fluid secreted daily necessary for the horse's digestion is from ten to twenty gallons, 99 per cent. of which fluid is composed of water.

During every twenty-four hours the digestion demands for the formation of the gastric juice double or treble as much water as there is blood in the whole body. Water passes with great rapidity from the stomach, being principally absorbed by the internal surface, and passes directly into the blood, and not, as many believe, into the intestines. This has been shown by repeated experiments. Substances dissolved in water consumed are found almost immediately thereafter in the blood vessels.

Severe exertion should not be required on a full stomach because of the pressure on the diaphragm, which interferes with proper breathing, and also because digestive disturbance is liable to follow.

The horse cannot vomit, hence the danger when derangement of the stomach occurs. After a longer fast than usual food should be given sparingly at first.

Bulk is necessary to intestinal digestion, but it must be consumed gradually. Condition cannot be maintained on concentrated or condensed food alone.

Grooming is essential in keeping the horse in condition. This should be thoroughly done twice each day, and plenty of elbow grease applied. After grooming, go over the coat with a clean, soft cloth, if you want your horse to present a particularly spick and span appearance.

Teaching a colt to shake hands. Lessons of this sort help to "gentle" him

In wet weather when the roads are muddy, a horse's legs should be washed clean after a drive, and thoroughly dried. Sand-crack, quarter-crack, thrush, and brittle horn result if this advice be not heeded.

James W. Dixon.

Perfectly halter-broken and less than forty days old. Always tie a colt where he cannot injure himself

This three-months-old colt is well trained to harness and has never been struck with a whip

The proper way to hold a colt — or a horse, either — when leading him

GENERAL PRINCIPLES OF FEEDING

INJUDICIOUS or improper feeding is responsible for no end of ailments in dogs which can be readily avoided by proper care and attention. The continued use of corn meal as a dog diet results in cutaneous trouble, irritation, scratching, sores, and loss of hair. The dog has all the appearance of a bad case of true mange and to the uninitiated is "mangy." Mange is quite different, however, being parasitic, whereas the improper feeding complaint is blood trouble and the method of treatment necessarily differs. True mange is treated by outward applications which kill the parasite, whereas the other complaint has to be treated internally — primarily by a radical change in the diet, and medicinally by blood purifiers.

It has been truly said that without good food all improved strains of animals, no matter how highly bred, deteriorate or run out. There is an old adage that the breed goes in at the mouth, and to mature animals so as to get the best results they must be properly nourished and developed. I say properly nourished or developed, advisedly, because it depends very much on the breed and the requirements, whether size is wanted or otherwise. In the case of St. Bernards Mastiffs or Great Danes, where size is a consideration, puppies must be forced along from the very start and kept growing and fed so that they will have good bone and straight legs. Meat and food containing phosphate of lime is in their case a necessity. Of course it is so with all dogs, graded according to what is wanted in the way of size, but in the case of all the large breeds it is more of a necessity. It is the nitrogen that the dog gets which develops him, and in the grain or starchy foods we get the fuel foods.

Very little progress has been made with regard to what is proper in dog feeding, and every dog owner becomes a law unto himself. All should know, however, that there is a marked difference between herbivorous and carnivorous animals in the size of their stomachs. Whether their stomachs are small because they are carnivorous or vice versa is immaterial, and we have only the fact to deal with. I think the Reverend Mr. Wynn, the great English authority on the Mastiff, suggested a fairly liberal feeding of grain food to young Mastiffs for the purpose of enlarging their stomachs, thus enabling them to eat more meat. But all dogs are not built on their lines, and the necessary amount of nitrogen must be given in its most compact form. Not only do we have this in meat, but we also have it in food that is more perfectly digested. Experiments in feeding dogs have been made by scientists with the result that it has been proved that dogs can thrive for any length of time on an exclusively meat diet, but with a regimen of strictly starchy food it is quite the reverse. They may put on fat, but it is at the expense of vitality, and they are more liable to disease and inability to recover from it.

Dog feeding, of course, begins with the puppy, and here we have the vital difference of stomach size to encounter. A puppy's stomach is exceedingly small when compared with that of the calf, for instance. Of course, it is much smaller actually, but it is also smaller when we take the respective sizes of the animals into consideration. I take the calf as comparative, because the first food given a puppy is invariably milk from the cow. Now there is no better food for an infant animal than the milk of its own species, but when you cross them you come to grief. A calf will take more at one drink than a puppy will take in a week, so that cow's milk in its natural condition is not suited to puppies, and much less so when it is watered under the belief that it needs weakening because the puppy is so young. Quite the reverse is required and the necessary amount of nourishment is only to be obtained by enriching the milk. This may be done by beating up an egg in the milk, or the addition of condensed milk which, because it contains sugar, is more like what the puppy has had from birth.

We must also recognize that dogs mature very rapidly indeed. A dog is as far advanced at the end of a year as a young man of eighteen years of age, and we may say as a basis of comparison for feeding, that a puppy after three months of age advances in one month more than a boy does in a year. It will be seen, therefore, that to keep a puppy for any length of time on a milk diet is radically wrong. There is no question but that nature is a very sound guide, and if in its natural state the dam does not continue to give milk in any large quantity for over six weeks, it is intended by nature that puppies need a change of diet at about that age. If left to her own resources the dam will come home to her nest after a food forage and disgorge partly digested food — meat to as great an extent as she can get it — and the puppies will feed on that. They would not get a drop, of milk after eight weeks at the most.

In England they are great believers in oatmeal for puppies, and judging by the result of oatmeal as the diet of Scotchmen, it is a good bone producer. By many it is said to be too heating for our climate, but the very large increase of its use as a domestic cereal would seem to controvert that. My personal experience is that no harm results from its use, whereas corn meal will not do at all if used steadily.

For the house dog there is not much risk of skin trouble from the use of corn meal, because it is only a variant on the home table, and the dog fed table-scraps has all sorts of food. The main thing in this table-scraps feeding is to see that the dog has sufficient meat, and that from puppyhood. It is a mistaken idea altogether to refrain from meat feeding, and it is immaterial whether the meat is raw or cooked. Bones should also be given to all dogs, particularly to growing ones. There is a very prevalent belief that feeding chicken bones is attendant with great risks, as they sliver and the sharp points will penetrate the intestines. They might do that if the sharp points remained long on the bones, but they soon disappear when subjected to the gastric juice of the dog. It is questionable if a piece of chicken bone ever passes beyond a dog's stomach. I got for several years the table scraps from a large boys' school where they had chicken twice a week. At first I had some fear of the result, from having read about the danger from slivers, but it occurred to me that these sharp points would be soon done for, and the test I made was carried on too long to admit of its not being thorough.

The main thing in feeding a dog is to recognize essentials, the first of all being, perhaps, the early maturity of the dog; that we must feed a puppy of three months of age, as we would a boy of four or five years, and so on. Further, that the dog is carnivorous and thrives best with a liberal ration of meat. JAMES WATSON.

Puppies of the large breeds, such as Russian Wolfhounds, Great Danes, etc., must be well fed and forced along from the very start, to give them good bone and straight legs. Meat in their case is a necessity. The children of the German Crown Prince and their Borzoi

A NOTEWORTHY SUMMER HOME ON LONG ISLAND

By ALFRED F. LOOMIS

Photographs by HENRY H. SAYLOR

THE summer home of Edward T. Cockroft, at Easthampton, L. I. (Albro & Lindeberg, architects), is considered by many the most distinctive house in that community of the extremely well-to-do. It is essentially summery in appearance, with its large porch at the east end and the corresponding pergola at the opposite extreme. The design is original and modern, but restrained. The proportions are satisfying.

The house is constructed of stucco over wire lath. The stucco is a warm buff in color, the tone being obtained by using the yellow sand of the vicinity. The pale green blinds arrest the monotone of the walls, and the luxuriant salmon-colored geraniums in the window boxes create a pleasing theatrical effect. The other woodwork is unstained and allowed to weather.

First-floor plan. Note unusual location of entrance hall

The whole exterior of the house breathes an air of cool, easy comfort, and this effect is also reached in the interior. The front door opens directly to the long living-room, which, with the dining-room, occupies the main part of the building. The dining-room, with the porch at its extreme end, is on the right of the front entrance, and the living-room at the left is also accessible from out-of-doors through the pergola.

Directly opposite the front entrance is the carriage entrance, which is separated from the living-room by a small hall and cloakroom. The living-room is set two steps lower than the dining-room level to accentuate the picture

The style of architecture employed in the Cockroft summer home at Easthampton, L. I., comports well with the flat character of the surrounding country. The house is essentially summery in appearance, the large porch at the east end and the corresponding pergola at the opposite extremity being strong factors in producing this effect

effect of the latter room viewed from the former. It is finished in chestnut throughout and is roomy and comfortable, with a large fireplace at one end for use in emergency. The dining-room is finished in French style with white furniture and white and gray walls. These tints heighten the effect of coolness which is so desirable in a summer home. In fact, all the furnishings are light rather than elaborate.

The stairway ascends in a straight, easy flight from the rear entrance hall. Upstairs, the six masters' bedrooms are all placed in the front of the house where there is plenty of sunlight. From the windows of these rooms there is an extended view of the ocean. There are four bathrooms for these rooms, and in the ell at the rear of the house there are three servants' rooms and one bathroom.

The roof is of unstained shingles woven in and curved at the ends to produce the thatch-like effect which these architects use so successfully.

The grounds around the house are laid out with hydrangea, privet, and an occasional cedar, again with the idea of offering a contrast to the lighter tones of the house. Dorothy Perkins roses are trained over the pergola and on the lattice on the front of the house, and wistaria grows in profusion over the front door.

The carriage house in the rear is designed in architectural harmony with the main building.

The total cost of this unusually charming summer home was $18,000.

The white paneled walls and light, dainty furnishings of the dining-room are typical of the pervading air of coolness and comfort throughout the house

The porch opening off the dining-room. This is the most comfortable and popular portion of the house on hot summer days. Stables at the right

Views of the living-room from opposite ends. It is on a lower level than the dining-room, thus accentuating the picture effect of the latter when viewed from the former. The entrance hall, opening off the living-room at the back, is also on a higher level

The great porch on the east, with its gabled roof and massive pillars, is a distinctive feature of the house

Side and rear view of the house, showing carriage drive and entrance, with a glimpse of the tennis court and stables at the left

This vacation home consists of a living- and dining-room with kitchen attached, in one canvas house, with three separate sleeping-houses nearby

One of the detached sleeping-houses with its bathroom adjoining. Note how the sides may be let down for free circulation of air at night

CANVAS VACATION HOUSES IN OHIO

By PHIL M. RILEY

Photographs by C. L. Lewis

THERE are thousands of persons who cannot afford a summer home, in the ordinary sense of the term, which is to be occupied for only a month or two each season, and there are others who, although able to enjoy such a luxury, do not care to tie up their money in this way. Various expedients are, therefore, resorted to. Living in a tent suggests itself because it offers the attraction of placing one about as near to nature as it is possible to get, but with the thought of it come visions of the lack of comforts and conveniences which one does not wish long to do without. If the vacation is of only a fortnight's duration, the finer conveniences do not matter so much, but where, as is often the case, a whole family wishes to remain in the country for two or three of the summer months, they become essential.

The problem thus presented seems to have been very satisfactorily solved by Mr. Adelbert L. Spitzer of Toledo, Ohio. Up the Maumee River at a convenient distance from the city, Mr. Spitzer has located his summer home, which consists of four separate, detached houses, three of which, are exclusively for sleeping. All are of heavy canvas stretched over frames of pine with board floors raised about two feet from the ground. Each building has two canvas roofs, one about eight inches above the other. This not only makes the rooms cooler, but, in case of a severe storm, it prevents any leaking. The canvas is made in sections of proper size, stretched over the wooden frame and fastened to it with screw-eyes passed through holes cut about the edges of the canvas.

Thus moving in or out is a simple matter. At the end of the season the canvas can easily and quickly be taken down, leaving only the wooden frame exposed to the weather during the winter. If the woodwork is painted to prevent it becoming watersoaked, rotting will be prevented for several years. The furniture may be shipped back to the city home or placed in a small, inexpensive stable or automobile house nearby as desired. Reconstructing the house upon the return of summer is equally simple.

One of the houses is given up entirely to the living- and dining-room with its adjoining kitchen. The former, a high, airy room, is 18 x 34 ft. giving ample space for every necessary comfort of the ordinary summer cottage. The floor, although of smooth matched lumber, is covered with three large rugs to make it seem more homelike. Almost the entire upper half of the side walls has been left open to admit light and every breeze that blows, but these openings and the doors as well have all been screened and provided with canvas curtains to close them in stormy weather. When not in use, these are rolled up above the windows by cords passing through little awning pulley blocks and fastened there. Nearby and connected with the living-house by a narrow wooden path, are the three sleeping-houses. These are 12 x 14 ft. with bathrooms 5 x 7 ft. attached, and are built exactly like the living-house. Wide screened windows on opposite sides ensure free circulation of air at night, while the curtains, which, instead of rolling, pull directly up and down, give privacy for dressing and undressing. One can adjust the curtains to the height of his head and still admit light and air above. Each of the houses is provided with the usual bedroom furniture and two single brass beds placed on opposite sides of the room near the windows.

The bathrooms are well equipped, including wash bowl, shower bath and closet, with all the plumbing arranged with unions so that these pieces may be detached and stored with the furniture and canvas during the winter.

Water was secured by pumping from a well near the river by a system which stores the water in a tank under pressure. The sewage is carried into the river by a short line of large pipe. Both pipe systems were relatively inexpensive.

Altogether this unique summer home, while not at all attractive in itself, makes a strong appeal to the lover of the open and seems to provide, at moderate expense, every comfort of a more permanent and costly wooden structure.

The living-room, also used for dining, is airy, roomy and comfortable. All the windows are screened and have curtains for stormy weather

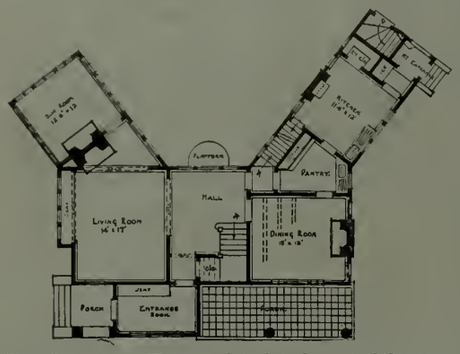
Each of the bed-rooms is of ample size and is fitted with the usual furniture, while a fully equipped bathroom opens from it

AN ATTRACTIVE HOUSE OF UNIQUE DESIGN

By R. A. STURDEVANT

Photographs by Jessie Tarbox Beals

A HOUSE that is striking enough to arrest attention anywhere — even in a community of unusually attractive homes — without being bizarre, that is pleasing to the eye as well as most unusual in design, is the home of Miss I. C. Montgomery, at Nassau Boulevard, Long Island, designed by Charles H. Sparry and Louis V. Bruyere.



First floor plan. The complete detachment of the service portion from the rest of the house is a good feature

The house is located on a 100 x 100 ft. lot, which is terraced up slightly from the street. A charming feature of the grounds is the pergola and garden space at the rear of the house between the two wings. At the end of this pergola is a sundial and a short flight of concrete steps leading up to the terrace. The long French windows at the back of the hall and the north windows of the sun parlor overlook this grassy terrace.

The exterior finish of the house is shingles, with wide exposure of butts, the whole painted white.

As will be seen by the floor plans, the two wings project at obtuse angles instead of right angles, making every room in the house open to the sunlight at some time during the day.

While not apparently a large house, it is so well planned that the floor space is made to yield eleven good sized rooms besides a large stair hall, reception room, pantry, and three bathrooms.

The entrance porch is at one corner of the house, from which a door leads into the small reception hall, which in turn opens into the large central hall from which the stairway ascends to the second floor.

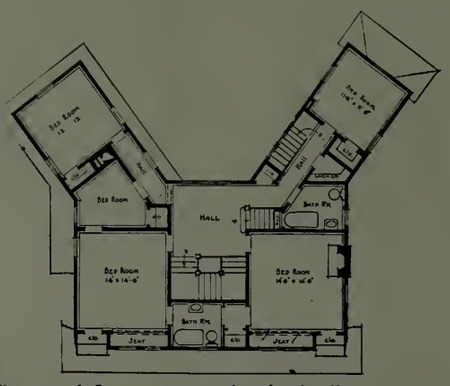
This central hall extends the width of the house, and strikes the visitor as being unusually bright and cheerful, as the rear wall is composed wholly of long French windows opening out on the grassy terrace at the back.

At the left of the hall is the living-room, 14 x 17 ft., and directly beyond the living-room is the sun parlor. Hall, living-room, and sun parlor are connected by wide doorways, so that they may be thrown practically into one large room at will.

The living-room is unusually well lighted, having expansive east and south windows, but the sun parlor is nothing but windows on the south, west, and north. They are of casement construction, making the room virtually a veranda, without the necessity of taking off the windows and storing them away. Both rooms have large fireplaces and built-in seats.

The dining-room is at the right of the central hall, and opens on the front piazza with long French windows. Here the ceiling is beamed — the beams stained a soft brown — and a large open fireplace adds the necessary finishing touch.

At the back of the dining-room a large butler's pantry connects with the kitchen. This pantry is equipped with a sink and a large dresser or glass enclosed cupboard and shelves.



The second floor rooms are for the family or guests, the servants' quarters being on the third floor

View of front and south side of the house, showing how the entrance porch from the porch proper, giving a measure of seclusion to the latter

Rear view of the house showing the pergola and sundial. Note the differences in detail in the two wings. Growth of the planting will add greatly to the general effect

Beyond the pantry is the kitchen, its location in the northwest wing corresponding to that of the sun parlor in the southwest wing, which insures perfect ventilation and plenty of sunshine.

Opening off the kitchen is the refrigerator room, where ice is delivered from the outside, and the servants' porch, shaded by small evergreen trees, which give it a measure of seclusion from the adjoining street.

On the second floor are five good sized bed rooms and two bathrooms, the two main bed rooms being arranged en suite with one bath.

Both bathrooms are tiled, with nickle fittings and open plumbing. Each bedroom has ample closet space, and one has an open fireplace.

The finish of the woodwork on this floor is white, with birch doors and yellow pine floors.

The sleeping quarters for the servants are on the third floor, comprising two bedrooms and a bathroom.

All floors throughout the house are double, and the heating is by steam.

A concrete floored cellar extends under the entire house, with the exception of the sun parlor, and here are located a laundry, fruit closet, and coal bins.

THE JOY OF MOTOR-BOATING

(*Continued from page 38*)

the farther end of one of these you find a man very busy selling engines who hardly looks at you at all until you ask your questions, when he smiles a reminiscent smile and shows you his picture book, and it does not say anything about the only water-jacketted exhaust on earth, but it says: Marblehead, such-a-year, or Bermuda, such-a-year; and the pictures are beautiful boats named *Glenda* and *Viator* and *Elkhorn*, or *Tonopah* and *Ailsa Craig*, or *Tuna* and *Talisman*. So you give this man a cheque and he says: "Some day, under the mercy of Heaven, we may send you an engine," and you go away happy because you know that when it comes it will be an engine.

To be very practical for a little, all this means that if you wish to get an engine for a heavy cruising boat, showing the utmost reliability, the greatest economy and the most careful thought-out design for the yachtsman, out of the 3,000 engine builders your choice may possibly fall among just three. Among high-speed racing engines of the best type — and these have all been four-cycle — there have perhaps been three in the country that have fully justified their builders. There have been special engines built for special boats, but among stock engines there are unquestionably not more than three to select from, and the names of these you may recognize in the more prominent race meetings.

Even among the welter of two-cycle engines there are perhaps three that in practical service have proved themselves a little better than any of the others. One of these is a slow-speed, heavy-duty, two-port machine that has built itself a reputation for trustworthiness on both sides of the Atlantic, and the others moderately high-speed engines. There is a moderately high-speed machine that without question has saved designers' salaries for many rival builders. One season its water-jackets were enlarged about the head of the cylinder and the timer was elevated; in the following year rose up all the timers in the land and the cylinder-heads swelled portentously.

It did away with its water-piping and bloomed a pressure oiling system, and immediately water-

"The owner lives with his engine and knows that it is wonderful — like his gun and his horse"

piping vanished out of all the earth and every scrap-pile styled an engine was overlaid with seamless brass tubing. But the presiding genius, like the late Sir Anthony Gloster, left them stealing and sweating a year and a half behind, until now this four years' development has conventionalized into a remarkably convenient little machine that will run for hours without any sort of attention. And some other of the two-cycle engines are not so very much worse. The marvel is how good some of them can be for the price. There are probably as

TH

oor. All you are asked in return is con-
'v less care and thought than you would
n a horse.

the fart. u are a yachtsman.

very bus. rely a sacred term and has, contrary
you at all belief, rather a secret meaning.
smiles a re. one kind of real yachtsman, as
picture book, one kind of sportsman in any
the only water- at is the man who knows and
it says: Marble is playing. I remember seeing
such-a-year; and t in a very rotten play called
boats named *Gl* " It was the sort of play in
or *Tonopah* and ght begins with a very good
Talisman. So yo comes tired of writing any
he says: "Some da to help it out. In the third
we may send you on a steam yacht's deck
happy because you mathematical precision of
will be an engine. op, and plaster each other

To be very pract unpremeditated English.
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cruising boat, sho own a yacht without being
the greatest econ was not original, but it may
thought-out desig nly truth in the play.
of the 3,000 engin ism that conduces so nicely
possibly fall amon millionaire yachtsman" as
speed racing engine The very absence of effort
have all been four e effective. You come down
been three in the on your hat than an admiral
tified their builder time of sacrifice. There is
engines built for sp polyglot crew mentioned
engines there are u tout and powdered wife
three to select from willow chair over a mossy
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meetings. er vanishes, and without

Even among the mid highly polished brass,
there are perhaps t untroubled waters. Isn't
have proved themse on't know the igniter from
of the others. On u don't want to. You are
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itself a reputation and you are making your
sides of the Atlantic ary snobs.
high-speed engines. tsman?
speed machine that here is a very great yachts-
designers' salaries fo is Thomas Fleming Day.
season its water-ja pressed his opinion before
the head of the cy e you have asked, he will
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timers in the lan e answer.
swelled portentously g will never give you back

It did away with it it or your digestion. To
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a scraper, it makes you
with the whole machine,
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you should always run
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that you should know
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ossible doubt. If you
perfect, a god that you
ll give you a gift that
you, and you will thank
ife for telling you. Be-
ly be that there is more
t of motor-boating in
port on earth.

"The owner lives with h is wonderful — like

yachtsman" must be
world or he would not
everything on earth
function, from the un-
biscuit to the unheard
nga, and "the millionaire
has his. His task, set
, is to build beautiful
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, for you and me to buy
piping vanished out an half their cost. It is
scrap-pile styled an y he fulfill it! For that
seamless brass tu cause the process is the
genius, like the late which is this:
them stealing and so a certain eminence in
behind, until now t ust evolve things to keep
has conventionalize e, and when you evolve
venient little mach ur social prestige you get
without any sort of r people derive the benefit.
of the two-cycle en his was made into a nice
worse. The marv applied to things ashore:
can be for the Houses and wise men live in

them." Similarly: Human benefactors build beautiful boats, and you and I (who love the eternal sea) go out in them in the rosy dawn.

The way it works is simple. If you are operating a power yacht in calm waters for the sake of your social prestige, and are putting on the full pressure of what is technically called "dog," it is *de rigeur* that you have an immense crew, a crew that, ton for ton, would make a battleship livid with mortification. I remember one case where I was an abashed guest, where they had a crew in festoons, down to a boy who only functioned once in all the time I was aboard, and this was by carrying away a tray of cigar ashes and casting it into the ocean. Socially this may be beautiful, but from a yachtsman's point of view it is great rot. To operate a yacht in this way costs a very great deal of money and any one who can afford to do it can afford to build any sort of boat he wishes. Now here comes in the explanatory point. Motor-boats on this continent have been vigorously governed by changing fashions. We have passed from plumb bows and overhang sterns, with two spars, through sloping bows and canoe sterns with no spars at all, and now we are coming back to plumb bows and overhang sterns again, and we have once more developed a spar, and sometimes

"So, when 'the millionaire yachtsman's' boat goes out of fashion, she descends to the real yachtsman, who runs her for the sheer love of her"

two. There is every indication that motor-boat fashions travel in a closed orbit, like Halley's comet, but motor-boats have been discovered for such a short time that the period has not yet been calculated. So, when "the millionaire yachtsman's" boat goes out of fashion he casts her aside and she descends, with all her satinwood and ivory, to a real yachtsman, who runs her for the sheer love of her, and who knows her from the chain-stoppers in her forepeak to the last lost paint-tin in the lazarette. It is a blessed arrangement. It is the benign breath of Providence offering to some of the keenest worshippers of His sea the means of attaining it in its full glory. Already the coastwise harbors are full of unfashionable 90-footers hauled up — magnificent boats that cost $20,000 to $30,000 to build, and that you and I may obtain for a comparatively few kopecks. They may not be anything we might plan if we were planning them, but they are splendid craft in the main and we let too many of them lie still. Run for the pure pleasure of running them, and not for the blazing appearance of things, it costs very little more to keep a big cruiser in commission than it does a moderate-sized boat, and you have comfortable staterooms and the space and airy freedom of a house. A little more paint, a little more varnish, and not so much more gasolene. The captain and the mate, the Scottish engineer, the Swedish deckhand, and the Japanese steward all vanish, and are replaced by gentlemen that tell amazing stories into the verge of the gray dawn. The Chinese cook, or some other cook, may remain, at the option of the expedition, and there is one more man, who polishes eternally and keeps all things in order. Then you move into that mysterious country where the flow of tides unheard and the slow revolving canopy of the stars work the mechanism that reduces charted banks and uncharted snobs to their own proper position in the Universe, and you fish for sculpins in your bare feet, and your perspective is restored, as in the days when you were a little child.

IF you are building or remodeling your house your work will progress much more satisfactorily and rapidly if you have expert advice upon the selection of wood finish for the trim and floors; also in deciding upon hardware, tiles, lighting-fixtures, wall-covering, drapery and furniture.

You can have for the asking the full service of Murphy Varnish Company's Department of Decoration which includes practical advice on all of these points.

Write today and send your blue prints or a rough draft of your plans to Margaret Greenleaf, Consulting Decorator for Murphy Varnish Company. You will be astonished at the complete color scheme you will receive.

This is offered free through the courtesy of the Company to their patrons.

Murphy Varnish Company stains, enamels and varnishes are the most artistic — *and last the longest.*

Address Department of Decoration

Murphy Varnish Company

345 Fifth Ave. New York

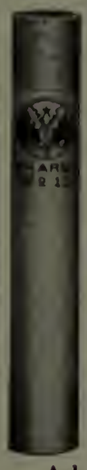
Do You Smoke Advertising? or Cigarets?

Read This

The usual way of putting a new cigaret on the market is simply to put the same old cigaret into a new box, and *whoop 'er up!* A big selling organization and big advertising are brought to bear and *big sales are the result.* When the novelty of the *new label* wears off and the public is ready for a change, *the process is repeated*—and the patient public goes on *smoking advertising*—not cigarets.

For fifteen years the public has been *stampeded* from one cigaret to another in just this way, and about the only change it ever gets is from a red box to a blue one and back again—with an occasional dash of brown. In short, the average cigaret is not a *smoking* proposition, but a *selling* proposition.

The Makaroff business is different. I started the manufacture of



MAKAROFF RUSSIAN CIGARETS

because that was the only way I could be sure of getting *the kind* of cigarets I wanted. It has grown because there are a lot of other folks who want *that kind* of a cigaret. And the number grows just as fast as people find out *what kind* of a cigaret Makaroff is.

Just let this fact sink into your consciousness and stay there—*this business is* and *always will be* operated to make *a certain kind* of cigarets—not merely to do a certain *amount* of business. I always have believed that if we produced the quality, the public would produce the sales. And that faith has been justified. Makaroffs are really different from other cigarets—and the difference is all in your favor.

You will find that you can smoke as many Makaroffs as you want without any of the nervousness, depression or "craving" that follows the use of ordinary cigarets.

Makaroffs are absolutely pure, clean, sweet, mild *tobacco, untouched* by *anything whatever* to give them artificial flavor, sweetness, or to make them burn.

Pure tobacco won't hurt you. You may not be used to it, and you may not like the first Makaroff, but you'll like the second one better, and you'll stick to Makaroffs forever if you once give them a fair chance. We have built this business on quality in the goods and intelligence in the smoker—a combination that simply can't lose.

No. 15 is 15 Cents—No. 25 is a Quarter

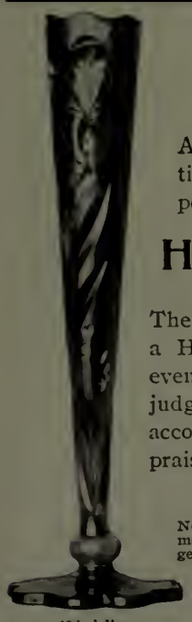
Plain or Cork Tips

Ask Your Dealer

Makaroff - Boston

Mail address, 95 Milk Street—Boston, Mass.

Ask Your Dealer



13-Inch Vase
Gravic Iris Pattern

Color, Craftsmanship and Design

All these telling qualities are brought to rare perfection in

Hawkes Glass

Cut. Engraved.

The distinctive *difference* in a Hawkes piece appeals to even the untrained eye; expert judges of glass unanimously accord it highest artistic praise.

At the best dealers.

No piece without this trademark engraved on it is genuine. If your dealer does not sell Hawkes Glass, write for address of one who does.

T. G. Hawkes & Co.
Corning, N. Y.

Write for Our Free Book on Home Refrigeration

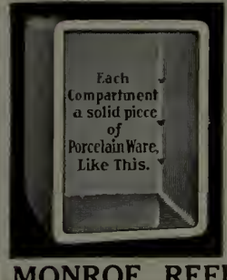
It tells you how to select the Home Refrigerator—how to know the good from the poor—how to keep a Refrigerator sweet and sanitary—how your food can be properly protected and preserved—how to keep down ice bills—lots of things you should know *before selecting any Refrigerator.*

Don't be deceived by claims being made for other so-called "porcelain" refrigerators. The "Monroe" has the only real porcelain food compartments made in a pottery and in one piece of solid, unbreakable White Porcelain Ware over an inch thick, with every corner rounded, no cracks or crevices anywhere. There are no hiding places for germs—no odors, no dampness.

Always sold DIRECT
and at Factory Prices.
Cash or Monthly Payments.

The "Monroe"

The Lifetime Refrigerator



The leading hospitals use the "Monroe" exclusively and it is found today in a large majority of the very best homes. It is built to last a lifetime and will save you its cost many times over in ice bills, food waste and repair bills.

The "Monroe" is never sold in stores, but direct from the factory to you, **freight prepaid** to your railroad station, under our liberal **trial offer** and an ironclad guarantee of "full satisfaction or money refunded."

Easy Payments We depart this year from our rule of all cash with order and will send the "Monroe" freight prepaid on our **liberal credit terms** to all desiring to buy that way.

Just say, "Send Monroe Book," on a postal card and it will go to you by next mail. (10)

MONROE REFRIGERATOR COMPANY, Station E, Lockland, Ohio

A PLEA FOR PLAIN FISHING

WHILE planning a vacation trouting expedition we glanced through the back numbers of COUNTRY LIFE IN AMERICA for ideas and suggestions. The article "Fly Fishing for Brook Trout," by Charles Bradford in the April, 1906, number caught our attention.

We had planned an inexpensive but jolly good time fishing as we had fished when small. The article set us to wondering if we had better give up our happy and hopeful anticipations rather than outrage the author's picture of humanity and sportsmanship.

We knew we were unable to afford the cork-handled lancewood or bamboo rod which Mr. Bradford seems to insist upon. In the busy days of the past we had neglected to learn how to flip an expensive bit of feather invitingly along a stream. In the old days we fished with

Fishing was a simple matter in the old days. A bent pin and a string meant fish for dinner

a pole cut from the bank; fished with hooks costing something like five cents a dozen; fished without leader or reel and (how we ought to blush now!) fished in a calico shirt and patched pants. Still the trout bit—perhaps they were different in those days.

And is it not quite as fair to the trout to deceive him with a live worm or grasshopper with a hook in it, as it is to deceive him with an artificial fly—with a hook in it? and because we find the worm or cricket more efficient than the fly, can we be justly accused of harboring motives of mere destruction, of wishing to

As we grow older we add to the equipment, but the trout don't bite much better

catch trout by the job lot? Even Mr. Bradford aims to select the right fly for the right place and time. Why has he one or two thousand artificial flies in stock if it is not to catch more fish with greater ease? If so, cannot we in turn suggest the still more productive means of dynamite and the net?

In the article referred to live-bait trout fishing is condemned as "cruel, clumsy, uncleanly, and unfair." Now the scientist declares that the worm, which is the orthodox bait of us ordinary anglers, suffers not at all in its squirms; its actions are but reactions. It is the same

with the other low forms of animal life which are used for bait.

Granted that this means is clumsy. What of it? Should we trip the light fantastic miles from anybody? Must we proceed from pool to pool by a two-step or waltz?

Surely, no one, when fishing, minds the slight stain from an angle worm or the loam from which it comes. At any rate water is plentiful and near at hand.

But with the best of living bait the trout is a worthy antagonist. He taxes the skill and ingenuity of the most artful angler. The eye must be alert, the hand ready, every nerve obedient to the slightest influence of breeze or current, or the prey is lost.

It is not the method of capture which determines the angler's pleasure. It is not the way in which he handles his equipment. It is the brook, the fish, the man himself.

Fishing, and trout fishing, is a democratic sport. It is for rich man, poor man, barefoot boy, or banker. Its requirements are neither gold nor silver, much knowledge or much tackle — merely a love for the out-of-doors. It is he of the gentle heart who gains the pleasure which the trout brook offers. It may be the doctor finding peace in the turns of the spring-fed rivulet. It may be the merchant revisiting the glimpses of the sunlight on the mountain torrents; it may be the philosopher who thinks and fishes. The bait may be the "Royal Coachman" or the plebeian worm — it is all the same.

RALPH E. DYAR.

AN AUTOMOBILE CAMPING TRIP

(Continued from page 52)

was near the Detroit River where we enjoyed a delicious supper of frog's legs, fish, and chicken. The next was in a schoolhouse yard near London, and the last on the shore of Lake Ontario.

At the end of our 1,200-mile journey, we had not one disagreeable or unpleasant experience to record. Every moment had been enjoyable, and all voted it the ideal way to make the trip. The car couldn't have behaved better, and one puncture was our only trouble. Seventeen miles per gallon of gasolene had been our average.

Most surprising of all, are the low expenses of such a trip. It is, in fact, about the cheapest vacation one can devise. It cost us from $1 to $1.25 a day to run the car, and our meals averaged $2.50 a day for four people. Lodging cost us nothing. Rather different from railroad travel and hotel expenses! And we had delicacies, too; our refrigerator basket kept our butter cold and enabled us to have deliciously cool cantaloup, lettuce and tomatoes.

A HOME IN THE DESERT

THE accompanying photograph shows a California bungalow which bears a close resemblance to its prototype in India. Many of the Indian bungalows have clear-story windows — not a second story — above the veranda roofs, for the purposes of ventilation. This has proved to be a most desirable feature in a hot country.

The bungalow shown herewith is located in the midst of the desert at Palm Springs, Cal., near an old Indian village. Hot weather comes there as early as May, so that special construction was necessary. The roof is double, ventilators extend all around, and the inside doors are supplied with large transoms. This is a type of bungalow built for a purpose, and not to conform with a fad.

An attractive desert bungalow built for a purpose

MRS. B. W. MCKENZIE.

"Daffodils, that come before the Swallow dares"

FROM NOW UNTIL

July 1st Not Later

There is no more useful garden material than what are known as Dutch Bulbs, Hyacinths, Tulips, Narcissi, Crocus, etc. They give for a small outlay of time and money an abundance of flowers in the house from December until April, and in the garden almost before the snow is off the ground in the spring until the middle of May. These Bulbs are grown almost exclusively in Holland, and in enormous quantities, where they are sold at very low prices. Usually they pass through the hands of two dealers, and more than double in price before reaching the retail buyer in America.

By ordering from us **now** instead of waiting until fall, you save from 20 to 40 per cent. in cost, get a superior quality of Bulbs not to be obtained at any price in this country, and have a much larger list of varieties to select from. Our orders are selected and packed in Holland, and are shipped to our customers in the original packages immediately upon their arrival from Holland, perfectly fresh and in the best possible condition.

If you wish to take advantage of our very **low prices,** we must have your order **not later than July 1st,** as we import Bulbs to order only. They need not be paid for until after delivery, or taken if not of a satisfactory quality. (References required from new customers.) Our import price list, the most comprehensive catalogue of Bulbs published, is now ready and may be had for the asking.

A Few of the Prices:

	Per 100	Per 500
Fine Mixed Hyacinths	$3.25	$15 50
Fine Mixed Tulips	.75	3.50
Extra Fine Mixed Tulips	.95	4 25
Narcissus Poeticus	.70	3.00
Double Daffodils	1.75	8.00
Narcissus Bicolor Empress	2.50	11.50
Narcissus Emperor	2.75	12.00
Narcissus Golden Spur	2.25	10.00
Narcissus Bicolor Victoria splendid free flowering	2.50	10.00
Spanish Iris, slpendid mixture	.45	1.75

ELLIOTT NURSERY CO.
337 Fourth Avenue, Pittsburgh

BINNER N.Y.

THE NATURE CLUB

(*Continued from page 56*)

the pupa humps its back, and awaits the final change.

Within an hour the skin splits in the middle line of the thorax, and twenty minutes later the creamy white insect should be through its struggles, and be peacefully drying its wings and body wall.

The late Dr. C. V. Riley, lover of beauty, as well as famous scientist, says of the transformation scene he so often witnessed: "There are few more beautiful sights than this fresh-forming cicada in all its different positions, clinging and clustering in great numbers to the outside lower

Twigs containing cicada eggs, male and female cicadas and empty pupa shell

leaves and branches of a great tree. In the moonlight such a tree looks for all the world as though it were full of beautiful white blossoms!"

In the September, 1909, number of COUNTRY LIFE IN AMERICA, two pages of pictures show the steps by which the cicada's final moult is accomplished. If you have access to this number, by all means look them through again. But the more important thing is to find out where the insects are emerging, and go out with a light and see the miracle performed. The cicada is not shy. Bring indoors a branch on which the insects are preparing to moult. Not one of the family can go to bed before the job is completed. By morning the pale creatures will have turned brown, and unless you prevent it, they will have taken flight.

The brief aerial life of cicadas. The first day out of the ground fully dries the cicada's wings and shiny armor, the first week sees millions flying and singing together. The month that follows is occupied by the serious work of egg-laying. Within six weeks of the time of their emergence the females have exhausted their strength, and died, after laying their four to six hundred eggs. The males have not survived so long. The brood comes out of the ground with a surprising suddenness. They do not straggle out, but all come at about the same time. Six weeks later they are gone.

The musical instrument of the cicada. The sluggish insect will let you handle it. There is no sting to be afraid of. Hold between thumb and finger so as to prevent the wings from flap-

ping, and look at the under surface of the body. If it is a male you have captured, two ear-shaped drums will be seen on the first segment, or joint, of the abdomen — the one next to the thorax. A strong muscular cord attached to the inner, concave side of each drum, contracts and expands, so as to throw it into vibration, and hollow chambers connected with the drums magnify the sound produced by the vibrations, giving it depth and volume, which is increased by the thin membranes, called mirrors, which lie beneath the external drums. Notice the corrugated appearance of the drums. They are of parchment-like substance, in bands that alternate, thick and thin in structure, and very flexible.

The cicada's love song. Pinch him gently, and he will spring his familiar rattle — the long, metallic, clicking sound, not unlike the voice of some of our meadow grasshoppers. This is a protest against the unusual fact that he is not able to get away. You can see the drums vibrating, againand again, by persuasive pressure. But the song of the free cicada — that has modulation, expression. Hear the chorus of thousands, as they beat time together, making an uproar as of reapers at work in a field of grain, or the busy noises of machinery in a great factory. From the last week of May to the middle of June the days will be full of the monotonous music. It may be tiresome to you, but to the silent, voiceless female cicadas, for whose pleasure it is made and kept up for three weeks, it is music indeed. They have waited seventeen years to hear this concert, and when it is done it is time to die. Let us endure it with patience, and try to enjoy it.

Vibrating drums of a male cicada

Listen for the isolated song, represented by one student thus: "tsh-e-e-E-E-E-e-ou," with emphasis on the middle notes, the whole prolonged sometimes to a half minute in length, shrillest and highest in pitch at the middle, lower and slower at both extremities. This is "the gaunt cicada's reedy note" of which the poet sings. Do you hear it after sundown? How do the insects behave at night? Do you find them in the throng about street lights? What kind of eyes have they? How many? Where placed? Have they feelers?

The "stings" of cicadas. Once it was believed that these insects kill trees by stinging them. Other early writers said: "They eat all the foliage, leaving the trees bare." Both statements are false, as any one can prove by observation of his own this year. The mouth of a cicada is a large beak, fitted with a sucking tube, fine as a cambric needle. Its food is liquid — the juices of plants, principally the sap of trees, obtained by piercing the tender bark of succulent twigs, not with the beak, but with the needle. You can see the insects on the twigs. Set about finding what they are doing. Can you find the punctures they make?

The female cicada's weapon unsheathed

The ovipositor, or egg-laying apparatus, is often mistaken for a "stinger." Either this sharp organ or the beak might pierce your finger if you were handling a cicada, but nature has provided no venom, and the insect has neither power nor inclination to sting anybody, or anything.

The cicada's egg-laying. This is the important thing. The female has several hundred eggs to provide a safe place for. Two weeks after the appearance of the brood, egg-laying has begun. You can see the process. Any trees but pines and their kin, with resinous sap, will do. The twig of the last year's growth, just back of the leafy shoot of this year, is chosen. The tissues are not too hard, and the twig is convenient in size to clasp firmly with the legs while the saws of the ovipositor are preparing the cavity.

The ovipositor is the pencil-like organ that lies in a groove guarded by overlapping plates on the under side of the abdomen, near the end. The egg-carrier has a stiff, supporting portion, and two movable blades, that slide back and forth on tongues projecting from the central support. The saw-toothed edges of the cutting

blades lacerate the tender tissues of the twig, as they are worked alternately by strong muscles. The incision is made at an angle of 45 degrees, and as deep as the cutting tools can reach. Between these knives and their supporting rod is the tube through which the eggs pass safely, and are laid in a neat row on one side of the cavity. When this space is full, the egg-carrier is thrust again to the bottom of the nest, and a second row of eggs is laid, with only a few wood fibres between the two rows. Two nests usually have a common entrance on the twig and this is marked by a protruding tuft of woody fibres.

Find Chimneys like this before the builders escape

It takes about forty-five minutes for a cicada to fill a double nest. In cutting into the twig, the ovipositor makes about eighty strokes to the minute. Is it any wonder that the female takes a little resting spell, after four nests are made?

The insect is too busy to notice that you are watching her. See all you can of this process. Try taking the twig indoors to watch the work. Does she work by night? Collect twigs. What is the highest number of nests on a single twig? Open nests and see how big the eggs are. How many in a row? How many in a nest? What shape? Color? Does the insect flutter while laying? Are the wings worn and the armor ugly and tarnished now, compared with its first appearance?

It will be six weeks or more before the eggs hatch. Then the larvæ take to their subterranean life, and we see them no more till .... what year? How many of us will be here to welcome them?

[NOTE.—All communications should be addressed to the Nature Club, Garden City, New York. Nature students are invited to contribute records of their work — photographs and brief articles — like the following. — THE EDITORS.]

THE CRESTED FLYCATCHER

IF HUMANITY has its examples of crotchetty individuals, who defy common sense and ordinarily accepted methods, so has also many a member of the numerous bird families, and this time it is the somewhat regal Great-crested Flycatcher who has done the unexpected thing.

A few feet from the writer's window, and from a much-frequented doorway at the rear of the house, stands a little dead peach tree. While around it, on every side, all is clothed in verdure, the bare tree frame is brown and uninviting, a mere relic of the past.

On May 22d some one, in passing, lifted a little old bird house from the ground where it had lain since falling from its perch on a neighboring rose-covered pole, and placed it in the crotch of the little tree about five feet above the ground. On May 23d a pair of crested flycatchers inspected the premises, whirling in and out, around and about, uttering shrill notes which must have meant approval, and at once went to house keeping. It was Mrs. Flycatcher who built the cradle; it was her faithful adorer who encouraged her by his calls, who watched while she built, who flew usually close beside her, alighting within a few inches of her as she carried material to the nest; who awaited her as close to the entrance as he well could get, while she arranged the apartment within.

At first it seemed scarcely possible that this pair would have the stamina to stand the racket, the interruptions to quiet life supposed to be necessary to felicity in bird-land. The pathway, within two feet of the little tree trunk, is one over which some one is constantly passing to the wild-flower garden, to the lily pools, and the rose garden just beyond.

Four dogs, as well as the human inhabitants of the place, course continually along the pathway at pleasure. The clatter of a kitchen about fifteen feet away mingles with the cries of a noisy baby who is cutting teeth and making a general uproar, within her out-of-doors kingdom a few paces off. Such confusion is not likely to

be interesting to birds who are house-keeping. But Mr. and Mrs. Flycatcher had chosen the locality, and were sufficiently strong-minded to come and go, attending to their own affairs, and criticising nothing that has transpired, except on two occasions. One was the interference of a friend, who one evening wired the bird-house fast to the tree to avoid catastrophe. Mr. Flycatcher shrieked in displeasure from a nearby apple tree, where he had taken quarters for the night.

He watched, waited, called, and winged so close with the little mate carrying building material at building time, and food later on, that the red and gold of their feathers flashed as one flame, as they whirled together to the nest.

But it was the little lady who, in early feeding days, brought all the food; later as appetites increased, the efforts of both birds were required

The mother flycatcher who was not afraid—that is, not so awfully afraid

to keep starvation from the door. It is well for human families that appetites are not so appalling—imagine feeding two infants every three minutes!

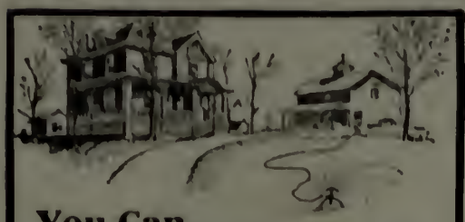
That the little mother never tired of her task was told to us by the low, sweet warble she gave so often just before entering the doorway. No doubt she was a happy little mother, even if sometimes her mate did sit on a neighboring tree, and utter notes as if of stern command, and always forgot to show her the courtesy of allowing her to deliver her burden first, when they arrived simultaneously with food.

One could not but be astonished at the size of the insects disposed of in a second by the babies—great dragon-flies with trailing wings, and lunar moths, over which the bird stumbled in the effort to drag them through the doorway.

The second occasion of interrupted felicity took on a serious look when a black object appeared on the lawn, and family cares were complicated by a deadly fear of an unknown peril. Feeding came to a standstill; sharp tones of warning and probably of reproach, rung out from apple tree and trumpet vine. It was the little mother, who gradually circled nearer and nearer the scene of terror, sweeping closer and closer to the nest, and finally took pity on her hungry babies at a risk of life itself. It was just then that the black object did its work, and the photograph of the heroic little motherbird was obtained.

By June 28th, the male bird seemed restive under his family cares, and evidently believed that the time had come when he should take a hand in changing conditions. He stampeded the little mother before she could deliver her moth. He stationed himself on a near-by tree and called; the answers came from the inside of the box. No food was carried for a considerable time. Before feeding began again the hungry babies moved toward the doorway, and got a glimpse of the outside world. They received the fluttering moths, and the parent bird rested an instant outside the doorway.

Early on the morning of June 29th, effort was



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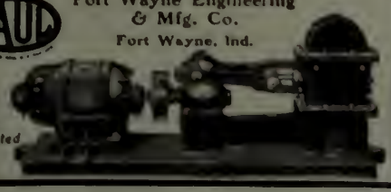

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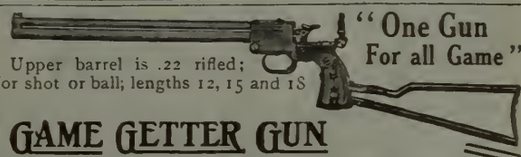

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again made to tempt the timid little ones out, and this time the gentleman of the household lost his temper because his babies did not respond as quickly as desired to his calls.

It was not until July 1st that two smoothly fledged babies with big mouths, short tails and pale yellow breasts sat on the home tree and sunned themselves, presently disappearing among neighboring bushes. All day we heard the little answering voices, and in a couple of days the two flew back together to the peach tree, and sat for a time close by the little doorway where they first saw light, the place where summer storms had rocked their little cradle.

This nest could not be said to be a marvel in construction, but it has its usual compliment of cast snake skins, an element in Great-crested Flycatcher nest-building never forgotten.

GEORGE KLINGLE

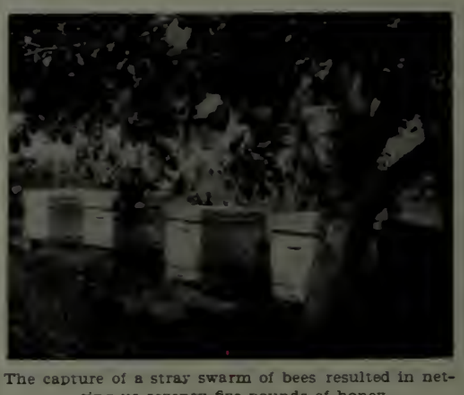
A SWARM OF BEES AND WHAT THEY DID

TWO years ago a neighbor called up over the 'phone and said that a swarm of bees had clustered on a limb of a tree right close to her clothes line and she was afraid to hang out her washing.

Knowing that we were interested in the culture of the bee, she wished some one of us to come and get the swarm away from there—she was willing to pay us for the trouble and let us have the bees in the bargain.

As it was June we knew the swarm would be worth at least the proverbial silver spoon and with intelligent care perhaps the load of hay, the value of a May swarm, as the saying is.

Father, ever since a boy, has loved to hive a swarm of bees; and who can imagine a spectacle more suggestive of the richness of early summer



The capture of a stray swarm of bees resulted in netting us seventy-five pounds of honey

than a swarm of bees in the air and slowly clustering on an apple bough from their swirling flight?

Father found the swarm to be a large one and clustered close to the ground, so cutting off the limb he swung it over his shoulder and bore the cluster of bees home much as the messengers sent to spy out the promised land bore home the immense clusters of grapes.

A hive was ready for the bees' reception and a sheet was placed in front of the entrance to the hive, so that they would not become entangled in the grass. The sheet also eased the jar when shaking them from the limb.

The uncommon thing happened within a week—this newly hived swarm commenced building queen cells and with a good queen in the hive too, so that we knew they were preparing to swarm. They had by this time almost filled their hive with comb and honey and we decided to divide them. We took a queen cell and two combs with the adhering bees and made a new swarm or nucleus and by using three cells the bees had already built we made three new nucleii or small swarms, making four swarms in all.

Within a month these four little swarms had built up in strength until they each had their hive full and made about seventy-five pounds of nice white comb honey over what they needed for winter stores. The four swarms are shown as they looked when they were filling their hives with comb during July and August.

WESLEY FOSTER.

FISHING FOR SEA-TROUT IN NEW BRUNSWICK RIVERS

(*Continued from page 48*)

they fed along the river's edge, eating the young maple leaves and other dainty tidbits. It added greatly to our interest, having these animals about us; but perhaps nothing gave us more pleasure than the rabbits, or varying hares, as they should be called. On one occasion we were camped on a grassy place where the ground was thickly studded with the fluffy, silky balls of the seeding dandelion. Along came a rabbit, paying not the slightest attention to us, as he daintily nipped off the dandelions, eating the stalks and discarding the seed head. Closer and closer he came, until he was within two feet of me. Never have I seen anything more beautiful, and I could not but regret that, owing to the lack of light, for it was after sunset, it was not possible to secure a photograph of such an unusual sight. Another rabbit came into our camp, eating bunchberry leaves and hopping about in a most unconcerned way alongside of the fire and all about us, not even being frightened when I walked away to our tent for the camera; and though the light was not very good, I got three fairly satisfactory pictures.

After all, the catching of fish is by no means the only pleasure one derives from a fishing trip. There are so many things of interest that one cannot see any but the most conspicuous, and the time goes so quickly that even these are not half seen or enjoyed. Most people altogether miss what is, perhaps, the greatest enchantment of the early summer woods—the half hour preceding the dawn of day, when the birds fill the air with their morning song.

Neither of us had ever seen the twelve or fifteen pounders that people tell of, and until we do, we will come back and try again for the three or four pounders of the T— River, and perhaps we may, even yet, catch our elusive friend, McGinty.

A MOTOR-CYCLE VACATION

(*Continued from page 54*)

spreading the vile dope. In one place the oil was put on so thickly that it was running off into the gutters—certainly a needless waste. Riding the motor through such a mess was simply impossible; I had to dismount and push her along.

As night came on the Catskills began to make an appearance. My route led only through the edge of the mountains, but even then the scenery was not to be despised, and, contrary to my expectations, the roads were, in general, very good. Through this country I saw quite a bit of small game — rabbits and partridge. In one place a partridge remained in the middle of the road until I nearly ran him down before finally concluding to vacate. Darkness at length overtook me at a little hamlet which consisted, if memory fails me not, of a small inn and three houses, and which rejoiced in the name of Shandaken. My speedometer indicated that I had covered a bit over two hundred miles since morning, and the poor old motor certainly looked it, while I was a close second, thanks to the oil we had traversed. That night I slept like a top, though was not especially tired. As a matter of fact, a hundred mile auto ride is more tiring to me than twice that distance via the two-wheeler.

Next morning I had a most delicious breakfast, and by eight o'clock was again on the road. I made no effort to travel at a rapid rate, being perfectly satisfied to take life easy and enjoy the beautiful country through which I traveled. The top of "Palmer Hill" offered a splendid view back over the mountains, and the picture which I took does not begin to do the subject justice. The little town of Andes lies down the other side of Palmer Hill and here I stopped for gasolene, that being the fourth and last stop for this purpose. I met another rider, also getting gas, who was about to start for New York City on his twin. He said that he had agreed to meet a friend in this place and that they were planning to go on together. With mutual good wishes we parted, and I entered on the last lap of my trip. About five miles out of Andes I met a motor-cyclist zipping along at a goodly rate, and concluded

that he must be the rider for whom my friend of the twin was waiting. The remainder of the journey offered no incident worthy of note. At half past ten I caught first sight of the Delaware, here quite unpretentious, and shortly after dropped down into the valley, finally reaching my last stop just in time for a welcome dinner. The speedometer gave a credit of 258 miles, though my total mileage, including some riding about that country and the return journey, was of course considerably more than that. Thus ended the first half of my trip—not a long one as tours go, but thoroughly enjoyable.

Now in conclusion let me say simply this: Don't consider the motor-cycle as a joke. Get a ride on one and see how it goes. If any of your friends are riders, get tips from them. Do not, however, accept the statements of a person who took up the sport in its infancy and then abandoned it. He must catch up with the procession before being qualified to be heard. Don't scoff until you try it; then if you want to scoff, go ahead. But you won't want to.

SEEING THE UNITED STATES

(Continued from page 41)

the mountains is to go from Boston to Intervale, a most delightful resort, and thence up through the famous Crawford Notch, along the Saco River and between high peaks, past Crawfords, another well-known resort, to Bretton Woods and Fabyan, where one has the best view of the Presidential Range, flanking Mt. Washington, the highest peak in New England. To climb this mountain, either by train, stage or on foot, is a thing well worth doing; round trip fare from Fabyan, $4.

From here it is an easy matter to go on to Woodsville and into Vermont, but if the trip is for the mountains primarily, it would be better to go around by rail to the Profile House, a charming location, and there take stage for ten miles down through the Franconia Notch to North Woodstock, another resort, where a train may be taken southward down the Pemigewasset Valley in to the lake country and so back to Boston. Much of the interest of the mountains lies in this Notch—Echo Lake, the Old Man of the Mountain, and the Flume. On the way to the Profile House one might do well to visit Bethlehem, one of the most popular spots in the mountains.

Beyond the mountains, about Colebrook, the Dixville Mountains and Connecticut Lake, is New Hampshire's greatest hunting and fishing country, where camping conditions are much the same as in Maine. A round-trip ticket from Boston costs $10.90.

Returning for a moment to Intervale and North Conway, it is here that interest in winter sports centres. Many of the hotels are open the year round, and people who enjoy tobogganing, snowshoeing, skeeing, and sleighing will always find jolly parties with which to indulge in them to the full. It is an ideal winter resort; round trip from Boston, $6.10.

Maine is the great fish and game country of New England, but on the way there one passes another of New Hampshire's attractions—its eighteen miles of seacoast. This short stretch is mostly sandy beach lined with attractive summer homes and excellent hotels, the Wentworth, near Portsmouth, probably being the largest in New England; fare from Boston $1.15. Other popular places are Hampton and Rye.

Once in Maine, it is a puzzle which way to go, there are so many attractions. The seacoast is unexcelled, with beaches like York near Portsmouth, Kennebunk, a little further down the coast, Old Orchard near Portland, and the more aristocratic Bar Harbor with its splendid homes and hotels on Mt. Desert Island. Here among the wooded islands which thickly fringe the coast is the most delightful place imaginable for yachting and motorboating. Bar Harbor is reached over the Boston and Maine Lines; $14 for the round trip from Boston. Another delightful way is by boat of the Eastern Steamship Company from Boston to Bangor up the Penobscot River, followed by a short rail journey. The round trip rate, including stateroom, is $10.50. It may also be reached by a short boat trip from Rock-

land, where the Bangor boat touches before starting up the Penobscot River.

Maine has several lake regions rich in their wild beauty which are visited mostly by fishermen and campers. Sebago is an exception; being nearer Portland and civilization, it is more the resort, yet in every way charming; round trip from Boston over the Boston and Maine lines, $5.40. Another delightful way is to take the Portland boat from Boston (round trip fare, including stateroom, $4) and avoid all but a short distance of the train journey. Nearby is far-famed Poland Springs, offering all the attractions of a big inland resort. In winter this is a centre for winter sports of every kind. Round trip from Boston, $8.

For the sportsman and canoeist Moosehead, the largest of the Maine lakes and one of the world's fishing centres, and the Rangeley Lakes form a perfect paradise for fishing, and the surrounding country in autumn for hunting deer and moose. Thus both regions have some attraction for the sportsman almost the year round. Both are reached over the Maine Central Railway, the round trip from Portland to Oquossoc on Rangeley Lake being $7.55, and to Kineo on Moosehead Lake, $10.80. A pleasant trip to the latter is also found over the Bangor and Aroostook Railroad, from Bangor; round trip fare, $5.75. Good guides into the hunting country north of these points may be secured at $3 a day.

Among the less frequented but no less meritorious resorts may be mentioned the Belgrade Lakes, which are passed on the way to Moosehead Lake and are well worth a visit by the fisherman. A round trip fare to them costs only $3.40 from Portland. Beyond Bangor, too, over the Washington County Railroad, are the Grand Lakes, famous for landlocked salmon. A round trip from Bangor to Princeton costs $8.60. The Eagle Lakes, almost on the Canadian border and most northern of the popular Maine waters, is another Mecca for the angler and hunter. It is reached from Bangor over the Bangor and Aroostook Railroad, round trip being $11.65. Maine is intersected by hundreds of streams, large and small, and in almost any locality the spring trout fishing is excellent.

NEW YORK

New Yorkers need not go outside their own state for resorts, yet Pennsylvania and New Jersey are so easily reached that they are very popular among those who start from Broadway on their vacations. Each of these three states has much of interest that is worth a far longer trip than from New York City.

New York is, perhaps, richest and most varied of all. One may well start with Long Island, the playground of the metropolis, with its beautiful North Shore residences, and several beaches, including Coney Island on the South Shore. All points are reached by the Long Island Railroad.

A trip up the lordly Hudson River, past West Point to Albany, by day or night, is one not to be forgotten. It makes a good start up state for any point beyond, and if one prefers he can go by boat and return by train, tickets on the New York Central Lines being good either way and on the West Shore Railroad. Fare to Albany by rail, $3.10; round trip, $5.75. On the boat one way fares by day are $2; by night, $1.50; stateroom, $2.

Well up the river toward Albany are the famous Catskill Mountains, reached by the West Shore Railroad or by boat to Kingston; round trip fare to Kaaterskill, $5.50. Here one may enjoy every luxury and recreation of mountain resort life amid the most delightful of settings.

Continuing northward from Albany over the Delaware and Hudson Railroad, one passes through far-famed Saratoga Springs (fare from New York, $4.20), and on to picturesque Lake George, the Adirondack Mountains, and the west coast of Lake Champlain. Throughout this region are good hotels and camping possibilities. The scenery is charming and the fishing is excellent.

Lake George, thirty-six miles in length, is famed alike for its natural beauty and historic interests, and is traversed from end to end by excellent steamers. Round trip fare from New York, $9.88. A little further north, at

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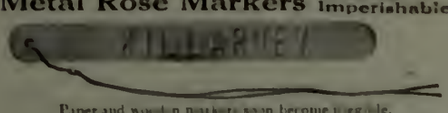

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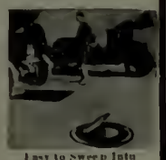

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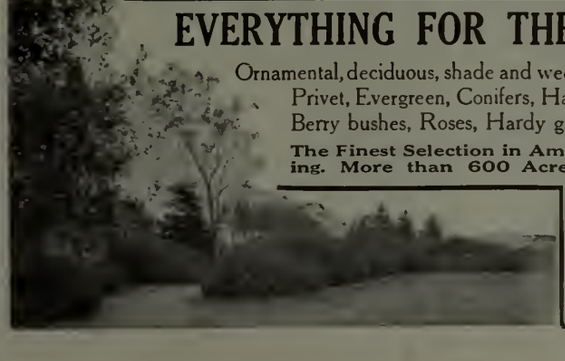
EVERYTHING FOR THE HOME GROUNDS



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Fort Ticonderoga (fare from New York, $6.22), steamer may be taken for a delightful sail to all points on Lake Champlain, among them Burlington. From here a superb return route would be across Vermont and down through the mountain and lake country of New Hampshire.

Still further north, at Plattsburg, a branch line may be taken to Au Sable Forks on the Au Sable River (fare from New York, $8.43) a pleasant resort, and the chasm one of the wonders of the state.

Canoeists, campers, anglers, and all lovers of the wild, will find their Paradise in the Great North Woods, as the Adirondack Mountain region is called. There in a forest primeval are numerous good hotels along the railroad from which trips may be taken into country as wild as can be found in Maine. In this region of many lakes set among wooded mountains there are a score of popular localities, all of them most easily reached over the New York Central Lines, where the trout, bass, and pike fishing are excellent.

The nearest of these lakes is beautiful Fulton Chain, a series of waters connected by narrow channels, of which Fourth Lake is most frequented. Round trip from New York to Old

No more beautiful locality for motor-boating could be imagined than among the Thousand Islands

Forge, $12.10. A little farther north is charming Raquette Lake with its irregular outlines and several islands. With very short carries one can canoe to Forked and Blue Mountain Lakes nearby, the latter being considered by many the most picturesque in this region. Fare to Raquette Lake, $7.40.

Several small lakes and ponds are passed in the journey northward before Tupper Lake is reached; fare, $7.70. This pleasing locality is made all the more enjoyable by Long Lake nearby which can be reached by canoe along the Raquette River by making a carry of two miles.

Continuing onward through a wilderness of small ponds one comes to Lake Clear Junction (round trip, $14.55), from which an electric railway extends the short distance to Lower St. Regis Lake. From Lake Clear Junction it is only a short distance to famous Saranac Lake with its superb hotels and many outdoor sports. This year a regatta of note is to be held. Canoeing possibilities are unlimited, as one can go from Lower Saranac through the river to the Upper Lake and a long chain of ponds. Saranac leads in outdoor sports, and in winter as well as summer it is gay with the joyous laughter of those who love every outdoor activity. Round trip from New York, $14.75.

At the end of this railroad branch is Lake Placid, second only to Saranac in popularity; round trip from New York, $15.35.

In the northwestern part of the state are the charming Thousand Islands of the St. Lawrence, offering never-to-be-forgotten boat trips among these wooded shores. They are best reached over the New York Central Lines to Clayton, round trip fare, $13.90. From here Frontenac, Thousand Island Park, Alexandria Bay, Ogdensburg, and other points of interest are reached by boat.

Still farther west, near Buffalo, is Niagara

Falls, one of America's greatest and most beautiful natural wonders. It may be reached by several railroads — the Erie, New York Central, Lackawanna, and Lehigh Valley, the last two offering an especially interesting trip because of the river valleys they follow. The Lehigh Valley also passes through the fertile farming country and lake region of central New York along the shores of Seneca Lake. Round trip fare to Niagara Falls, $16.

PENNSYLVANIA AND NEW JERSEY

Pennsylvania is of interest for its great industries, particularly steel and coal; its many cities, its great rivers, and its mountains; much of all being seen on any railway journey through the state. But it has many delightful resorts as well, to reach which one passes through the beautiful residential suburbs of New Jersey, the well-kept market gardens, and the Jersey hills. Over the Lackawanna Railroad, only eighty-nine miles from New York, one finds in the Delaware Water Gap a region the beauties of which can hardly be exaggerated. Here, ages ago, the river forced its way through a notch in the mountains, forming an ideal spot for the resort which has grown up around it. There are good hotels and recreations of every sort here, including boating, hunting, and fishing. Round trip fare, $3.40.

But a few miles beyond are the beautiful pine-clad Pocono Mountains, almost like a dream country for the vacationist, so many are the scenic and other attractions, and so ample the hotel and cottage accommodations. Brook angling is a favorite pastime, but there are many others. Round trip to Mt. Pocono, $4.50.

The beautiful hills of New Jersey are seen from the train in going into northern Pennsylvania, and they offer a delightful spot for a longer stay, especially the little lake region in the northern part of the state, where boating, canoeing, and fishing are the chief joys, and hotels and cottages are in plenty. Lake Hopatcong is the largest and most popular; round trip from New York, $1.95.

In spite of all the attractions mentioned, New Jersey is best known for its seaside resorts, which, thanks to the Gulf Stream, are enjoyable almost the year round. These include Atlantic Highlands, Long Beach, Asbury Park, and Atlantic City, America's greatest seashore resort. All these points are reached over the Central Railroad of New Jersey, round trip fares from New York being respectively $1.40, $1.50, $1.75, and $5.

Atlantic Highlands is also reached by steamer operated by the same railroad, offering a delightful trip down New York Bay; round trip fare, $1.

THE MIDDLE WEST

Space prevents a detailed consideration of many states which have no great scenic or resort features, but which are exceedingly interesting to ride through in going to more distant points. The great Middle West especially has many large cities of interest which have grown up as centres for the surrounding agricultural districts. It is, in fact, in these gigantic farms, raising crops of many kinds, that the chief interest of the Middle West lies, including such states as Ohio, Indiana, Illinois, Missouri, Kansas, Iowa, Nebraska, and North and South Dakota.

Chicago is the centre of this district, best reached over the New York Central Lines, the Pennsylvania Railroad, or the Erie. Over the former and the Michigan Central, one has a five-minute stop on the way at the grandest viewpoint of Niagara Falls. Round trip fare, on either line, varies from $25 to $35, including berth, according to the speed of the train. All tickets between Buffalo and Chicago via the Michigan Central, Wabash, and Grand Trunk railroads will be accepted for passage between Buffalo and Detroit on the boats of the Northern Steamship Company, and the trip is one of great interest.

From Detroit it is an easy trip over the Michigan Central, or by boat up Lake Huron, to the popular northern Michigan resorts about Mackinaw City or Mackinac Island. Here one enjoys cool lake breezes almost continuously, and yachting and fishing are the chief sports.

Aside from the vast grain and other agricultural interests, Wisconsin and Minnesota are rich in lake regions where well-to-do Chicago

and Milwaukee families have summer homes, and where there are hotels and recreations a plenty for the tourist. First of all may be mentioned the Waukesha Lake region, a large chain of small lakes near Milwaukee, reached over the Chicago, Milwaukee and St. Paul; round trip from Chicago, $3.70. To the north, at Fond du Lac, is Lake Winnebago, the largest in the state, reached over the Chicago and Northwestern; round trip from Chicago, $6. The entire state of Minnesota is dotted over with lakes which break what would otherwise be a monotonous agricultural area of tremendous size, while the northern sections of both Wisconsin and Minnesota are rich in hunting, fishing, and camping possibilities well worth studying.

CHICAGO TO THE PACIFIC COAST

Pushing farther west across the prairies one comes to the great Rocky Mountains and allied ranges which stretch almost across the United States from north to south. They can now be crossed by many railroads, each passing through scenes of wild grandeur and every one of them worth traversing. From Chicago one may take the Great Northern through North Dakota, crossing the Rockies in northern Montana, and so on across Idaho, through the fertile farming lands of Washington, and across the Cascade Mountains to Seattle. The fare from Chicago is $48, berth $13.

Over the Northern Pacific a more southerly route is taken through the same states to Seattle, or one may go down along the Columbia River, noted for its salmon fisheries, to Portland, Ore. Fare from Chicago to either point, $56.90; berth, $13. On this line, too, it is but a short side trip southward from Livingston to Gardiner at the boundary of Yellowstone National Park, a region of unexcelled and varied grandeur which every American should strive to see. The geysers, hot springs, lakes, and the Grand Canyon of the Yellowstone in their wonderful settings among mountains averaging ten thousand feet in height are known to all in picture, but their majesty, picturesqueness and beauty of color are never realized until seen in actuality. A trip of five and a half days in Yellowstone Park from Livingston and return, including meals and hotels, costs $55.50. Season, June 15th to September 15th.

To the south, the Union Pacific and Oregon Short Line take one through Iowa, Nebraska, southern Wyoming and Idaho to Portland,

In magnitude and coloring the Grand Canyon of Arizona is one of our greatest natural wonders

Ore.; fare, $56.90, berth $13; or over the Southern Pacific from Green River across Salt Lake in Utah, through the mining country of Nevada and over the Sierra Nevada Mountains of California to San Francisco; fare, $59.75, berth, $13. From Pocatello on the Oregon Short Line it is only a short side trip northward to the Yellowstone Park, a trip of four and one-half days from Pocatello and return, including hotels and meals, costing $55.50.

An alternative route between Chicago, Great Salt Lake and San Francisco is over the Santa Fé, and the Denver and Rio Grande through Missouri, Kansas, central Colorado and the Indian country about Pueblo; fare, $59.75,

berth, $13. This makes Colorado Springs and the garden of the Gods an easy side trip from Pueblo (fare to Colorado Springs, $1.35); and the railway climb up Pike's Peak easily accessible from Manitou nearby; round trip fare, $5.

THE SOUTHWEST

Through the wonderful Southwest there are two principal routes; the Santa Fé and the Southern Pacific. There is no more interesting route through this interesting section of the country than that over the famous old Santa Fé Trail. Every mile of the way has its memories, joyous and tragic, and many are the scenic wonders of the country passed by it. This line may be reached from Chicago through Kansas City, fare from Chicago to San Francisco being $59.75, berth, $13; or from New York over the Pennsylvania Railroad lines to Kansas City and thence to San Francisco via the Santa Fé, $76.75, berth, $18.50.

From Kansas City the route is through central Kansas, across southern Colorado, northern New Mexico and Arizona and up through the central and most beautiful sections of southern California to San Francisco. From La Junta in Colorado it is an easy side trip to Pueblo and Colorado Springs; fare, $2.35. Through New Mexico the landscape is oriental

Along the Columbia River in Oregon, the Pillars of Hercules share interest with the salmon fisheries

in coloring and one sees much of charm and interest in the sleepy Mexican villages and Indian pueblos, especially of the Zuni. Arizona, with its mountain terraces, plateaus, canyons and arid plains, is the wonder state of them all.

There are several Indian reservations worth visiting, including the Moki, Navajo, and Apache. There are the petrified forests near Holbrook and Castle Hot Springs, a beautiful and almost tropical resort near Phoenix where one may enjoy delightful weather from November to April. But the marvel of them all is the Grand Canyon of Arizona — the Titan of Chasms — in coloring and majesty one of the world's greatest masterpieces. A side trip from Williams, where there is a stop-over privilege on through tickets, costs only $6.50.

Another interesting route to California is over the Southern Pacific lines from New Orleans, the metropolis of the South through the plantations of Louisiana, the cattle country of Texas, across southern New Mexico and Arizona and along the California seacoast to San Francisco. Fare, $57.50, berth, $11.50.

New Orleans may be reached in several ways from New York, but best of all by steamer down around Florida. It is a superb trip and costs, one way, including berth and meals, $40; round trip with an option of one way by boat and the other by train, $70. This will be found most enjoyable, as the rail route takes one through the most interesting parts of the old South. From New York the line is through Philadelphia, Washington, where every American wishes sometime to go, across Maryland, through beautiful old Virginia of historic memory, along the foothills of the charming Blue Ridge Mountains, through the pines of North and

HOTEL AND RESORT BUREAU

Raymond & Whitcomb
Country Life

This Bureau has complete information about all the hotels and resorts in the United States, Canada, Mexico or abroad, and we will be glad to answer any questions or give any information about travel or hotels that may be desired. We will also be glad to make arrangements for hotel accommodations anywhere. There is no charge for this service. Main office located at 225 Fifth Ave., N. Y. Branches at Raymond & Whitcomb's offices in Boston, 306 Washington St.; Philadelphia, 1005 Chestnut St.; Detroit, Majestic Bldg.; Los Angeles, 509 South Spring St.; San Francisco, 397 Monadnock Bldg.; Portland, Ore., 132 Third Ave., also at Doubleday, Page & Co.'s office in the Peoples Gas Bldg. in Chicago. Telephone, write or call to the office most convenient to you.

THIS BUREAU IS AN ENLARGEMENT OF THE WHERE TO GO DEPARTMENT THAT HAS BEEN RUNNING IN THIS MAGAZINE FOR YEARS, AND COMMUNICATIONS MAY BE ADDRESSED TO THE READERS' SERVICE IF DESIRED

South Carolina and Georgia into the cotton states of Alabama and Mississippi.

CALIFORNIA

When one reaches California the puzzle begins, for it is a big state and the beauties are many. On the way to San Francisco over the Southern Pacific one passes through the heart of the fruit country, and, on the route from New Orleans, through most of the beach resorts for which California is noted. Los Angeles has beach and hill resorts on every side too numerous to mention, most of them reached by trolley. Santa Barbara with its fine old Mission, Paso Robles Hot Springs, Santa Catalina, a charming island resort, Monterey and Del Monte are all strong attractions along the great American Riviera between Los Angeles and Santa Cruz. All are easily reached over the Southern Pacific from San Francisco. Of the many inland features, one naturally turns first to the Yosemite Valley with all its many wonders, and the Big Trees in the Sierra Nevada Mountains, and Lake Tahoe, the great mountain resort of San Francisco. Round trip fare for four days' trip in the Yosemite National Park from San Francisco, $41.35, hotels, $15, or to Lake Tahoe, including a trip around the lake and stop-over privilege, $19.90.

THE SOUTHERN STATES

Jumping back to our eastern coast, we must not forget that the Gulf Stream renders the resorts of the Southern states as delightful as anything California can offer. Of them all, those in Florida easily rank first, and are as readily reached from Chicago and all cities east of the Mississippi as they are from New York. The Atlantic Coast Line offers a direct route to Jacksonville through fertile and interesting sections of the South; round trip fare from New York, $50; berth, $6 each way. For the same fare one may go a little more inland over the Seaboard Air Line, or much nearer the Alleghany and Blue Ridge Mountains over the Southern Railway.

Many very naturally prefer the delightful sail by water. There are the Savannah Line, several lines to Key West, and the Clyde Line direct to Jacksonville; round trip fare from New York, including meals and stateroom, $43.30. Florida is one of our greatest winter playgrounds, offering golfing, yachting, fishing, and the interest of the orange, and other fruit industries. From Jacksonville all West Coast points, including Tampa, Punta Gorda, and the orange country, are reached over the Atlantic Coast Line; fares, $5.80 and $7.55 respectively. All other points, including the most popular resorts, are reached from Jacksonville over the Florida East Coast Railway. As one goes down the coast, St. Augustine, the oldest city in America, with its Spanish landmarks (fare, $1.25), is the first point of interest. Just below is beautiful Ormond, famous for its beach race course; fare, $3.10. Well down the peninsula is Palm Beach, the rendezvous of wealth and fashion, where superb hotels and every sort of outdoor recreation join hands to make the tourist's stay enjoyable. Fare, $9.25. Still farther south is the tropical resort, Miami, on beautiful Biscayne Bay; fare, $11. At Long Key on the Seagoing Railroad to Key West is the fisherman's paradise, $14.45. This railroad is one of America's greatest engineering feats, and, it is expected, will be extended to Key West this year. At present, Knight's Key ($15.20 from Jacksonville) is the terminus. From here, Key West, the southernmost city of the United States and the principal centre for the manufacture of cigars, is reached by steamer in four hours, fare from Jacksonville being $18.90.

It is not necessary, however, to go so far south for balmy air and outdoor summer recreations in winter, for they may be found at Old Point Comfort. This famous resort with its excellent hotels is located near Norfolk, Va., Fortress Monroe, the largest military post on the Atlantic Coast, and Hampton Roads, the rendezvous of the nation's warships. Scenes of military and naval life create at this resort an atmosphere not found elsewhere. Old Point Comfort may be reached over the Pennsylvania Railroad (fare from New York, $13, berth, $2), and also by steamer. The Old Dominion Line offers daily service, a round trip including meals and

stateroom costing $14. For $15 one may go by the same line from New York up Chesapeake Bay and the beautiful Potomac River to Washington, or up the James River to Richmond.

To the southward and farther inland among the pines of North and South Carolina are several fashionable winter resorts, of which Southern Pines and Pinehurst are the most popular. Riding and golfing are the chief amusements, and the golf course at Pinehurst enjoys the distinction of being the most varied and the only one in America where forty-five holes may be played without repeating. A round trip from New York to Southern Pines costs $27.05 or $27.30 to Pinehurst; berth to either, $3.50.

It must not be thought, however, that the south is entirely a region for winter enjoyment. That applies only to Florida and the low-lying sections of the other states along the Atlantic. Back at a minimum altitude of two thousand feet in that "Land of the Sky" among the Blue Ridge Mountains, many of which rise to a height of six thousand feet, cool breezes are to be found, as well as excellent hotels, recreations a plenty and every luxury and enjoyment of resort life.

Beautifully situated Asheville, N. C., with superb scenery and points of interest on every hand, is the radiating point of this region. The round trip fare from New York is $30. From its admirable hotels side trips may be made for such recreations as hunting, fishing, riding, and mountain climbing. Among towering peaks not many miles away is a charming cluster of lakes, the largest being Fairfield, Sapphire, and Toxaway. The latter at the base of a mountain of the same name is probably most popular; round trip from New York, $33.70.

To the east is Tryon, a much frequented little mountain hamlet nestling on a southern slope of the Blue Ridge Mountains. The scenery is wild and picturesque and the views over the distant valley below most commanding. Round trip from New York, $30.25.

But for lack of space this list might continue almost indefinitely were it to include all the delightful minor attractions of the Carolinas, Tennessee and Georgia, as well as the better known Hot Springs of Virginia and other resorts close to our New York starting point. In fact, now that we are near home again, this survey of travel possibilities seems woefully incomplete. Our country is a vast one and in the space available it has been possible to suggest only a few of its greatest attractions in the briefest possible manner, but if the intending tourist will write to the passenger department of any of the railroad or steamboat companies mentioned he will receive complete descriptive literature. Moreover, the Readers' Service Bureau of COUNTRY LIFE IN AMERICA will gladly assist in any possible way.

A WORD FROM THE EDITORS

AN INTERESTING sidelight on what COUNTRY LIFE IN AMERICA readers are interested in came a few weeks ago, and has led us to believe that as many people are interested in farming—real farming—as in rhododendrons, automobiles, or Pomeranians.

In our March 15th issue—the Back-to-the-Land Number—we published a sketch of a model five-acre farm that received a prize from Governor Hadley of Missouri. Accompanying this was a brief explanatory article. The author had furnished a full description of the planting plan, but this we did not publish on the ground that it would prove dull reading for most people. Instead, we offered to send a copy of this fuller description to anyone who should apply to our Readers' Service. Almost immediately requests began to pour in, and the manager of our Readers' Service was obliged to secure the services of an extra typist to make copies for the applicants. After the rush was over, letters like this came:

GENTLEMEN:
I beg to acknowledge with many thanks receipt of "List of Plantings" of a model five-acre farm. It certainly is wonderful and an inspiration.
(MRS.) LOUISE C. WALKER,
New York City.

Now, all this sheds light on two things—the interest of our readers in real farming, and the

While no pains have been spared to make this a beautiful magazine, even greater effort has been expended in making it a practical magazine. One by one the problems that vex and harass the amateur rose grower are taken up and threshed out by the most successful American rose experts. This number will appear June 15th.

The consulting editor is Prof. Charles Sprague Sargent, director of the Arnold Arboretum at Jamaica Plain, Mass., and one of the leading spirits in the realm of American plant breeding and development. He is the author of "The Sylva of North America," a superb work in thirteen volumes, which is the ultimate authority on the subject and one of the most sumptuous scientific publications ever produced in this or any other country. Professor Sargent's own estate, Holm Lea, at Brookline, Mass., is perhaps, all things considered, the finest example of landscape gardening in America; it has had a great influence on the designing of American home grounds and gardens. This estate is to be described by Mr. Wilhelm Miller in our issue of July 1st.

The Arnold Arboretum which was described in our March 1st issue, contains the greatest collection of hardy trees and shrubs in America; many landscape gardening ideas have been introduced here and much has been achieved in the line of plant breeding. The admirable arrangement of the Arboretum has aided in this work, while Professor Sargent has also done much, by his introduction of many trees and shrubs previously unknown to American horticulturists, and by his manifold writings, to enlarge and clarify the ideas and to improve the practice of those who are gradually developing an American style of landscape gardening.

Some of the most important roses in the world have been produced at the Arnold Arboretum by hybridizing, and Professor Sargent and his associate Mr. Jackson Dawson are particularly well equipped to write authoritatively on the subject of rose growing. The whole issue has been so carefully planned and prepared, that we believe it to be the greatest contribution to rose literature in existence.

Professor Sargent fires the opening gun, and the number will contain the following illustrated features: "Roses in the United States — Their Limitations and Their Possibilities," by Charles Sprague Sargent; "America's Contribution to Rose Culture," by Jackson Dawson; "Better Ways of Using Roses," by Wilhelm Miller; "An Amateur's Rose Garden," by Cornelius V. V. Sewell; "How to Grow Roses in America," by E. L. D. Seymour; "The Scientific Way of Choosing Roses," by Thomas McAdam; "Rose Growers in Debate" — a symposium; "Roses Worth Crossing a Continent to See," by Kate Stevens Bingham; "Success with Fall Planting," "A Rose-Lovers' Bibliography," "Rose Growing in the Northwest," the usual departments, etc.

USE FOR PIGMY DEER

RAISING deer like chickens for pleasure and profit, may seem at first hearing a strange occupation, but for the deer in question one does not need a baronial estate. It is not exactly a back-yard industry, but with deer the size of small dogs and ready to be domesticated, almost any farmer might raise a herd. They would not be a bad ornament for a suburban lawn either.

The Department of Agriculture for several years has been discussing the question of raising game animals as a paying business. Quite recently it issued a pamphlet on deer raising and gave a number of breeds that probably would do well in this country, saying there was no reason why venison should not be a staple food with the people instead of being reserved as a luxury for a small proportion of the rich.

Then there came a practical demand on the Department for some meat animal, especially for use on the farms of the South that would be bigger than a rabbit or a turkey and yet smaller than a sheep or a pig, so that if one were killed it could be eaten by the average family before it spoiled. The Department replied that there were such animals and instanced the miniature deer of several countries as a possible solution of the small animal problem. Since then there have been numerous calls on the Department for more information and some ranchers and

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We have a special booklet containing full descriptions, specifications, designs and plans. If you will write us on your letterhead, we shall be pleased to send you a copy.

The chassis comes in two types, costing $4750 and $5250 respectively. Every chassis sold is equipped with solid rubber tires guaranteed for 10,000 miles of service.

The body costs from $1000 upwards.

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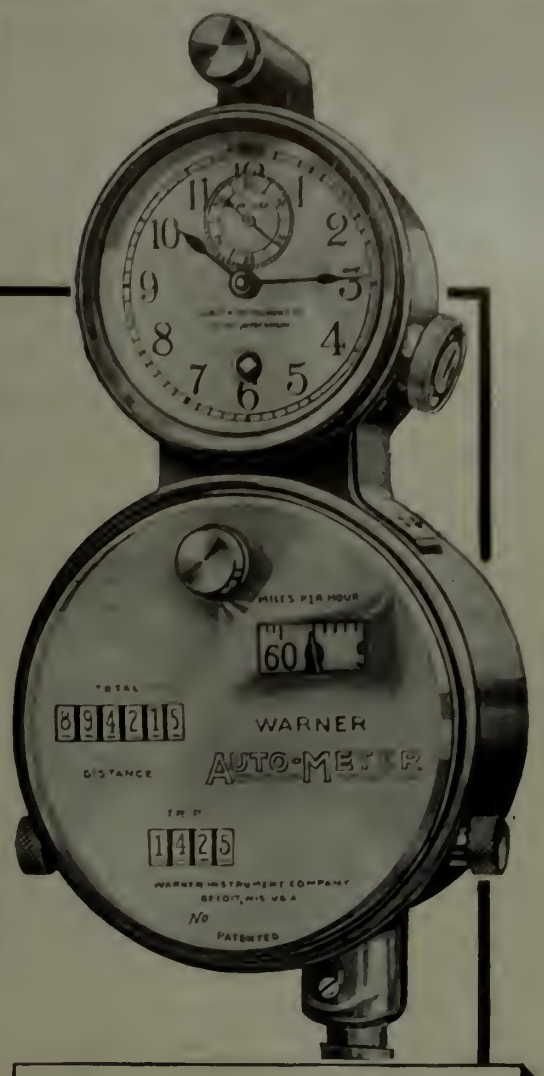

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No matter what top or glass front you select, you cannot go far wrong—all are good. *There is no definite standard of value.* The *Warner* is recognized as the Standard of Speed Indicator Values because of its Supreme Quality and enduring accuracy. You can go *away wrong* if you select the wrong Speed Indicator, for not all are good.

When you buy a Warner Auto-Meter, "The Aristocrat of Speed Indicators," you are buying for *years ahead*. You will use it not only on *this* car, but on many others. Thus is history. We are daily hearing of Warners which have been transferred to the seventh and eighth car—and which are still as accurate and reliable as when new.

The Speed Indicator, if it be the sensitive, accurate and wondrously durable *Warner*, will give you a correct indication of your speed and distance as long as you drive *any* car—or *several* cars.

Or, if you do not care to transfer it from one car to another, it can always be sold second hand for *half to two-thirds what you paid for it*, irrespective of age or how many miles it has indicated. There is a brisk demand for second-hand *Warners*. Every *Warner* ever made (except a few destroyed in fire or accident) is giving perfect service on *some* car.

* * *

The Speed Indicator is the most-looked-at thing on an automobile. The driver refers to it constantly every instant the car is in motion.

Other car owners and those who pass your car when drawn up at the curb, *look for the Speed Indicator* when deciding for themselves or for others whether you are driving a good car or not.

> It is common knowledge among Motorists and Laymen that the Warner is the *Highest-Quality* Speed Indicator and that it is used on the *best cars*.

Therefore, if the car carries a Warner on the dash, they unhesitatingly brand that car as *Good*. If it is an inferior and unreliable Speed Indicator, the Quality of the car is open to suspicion in their minds. Our Branch Managers and Salesmen in every important city report having many times heard people on the sidewalk, who have stopped beside a car, say in almost the same words:

> "I do not see the name of the car, but it *must be a good one* for it has a Warner Auto-Meter on it."

Now for the other side of the story:

One of our officials who stopped to admire a "classy" looking car in front of the Chicago Athletic Club a few weeks ago, found two Postal Telegraph boys likewise admiring it. As he approached, one was saying to the other:

> "It's a classy boat all right, but gee! the guy't owns it must be a cheap skate—look at de Speed Indicator. Me brudder trun one like dat off his motor bike."

* * *

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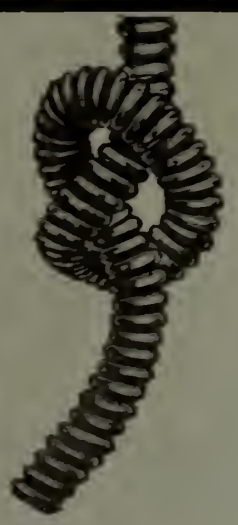

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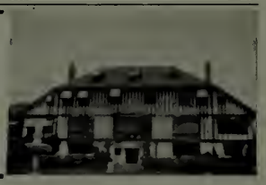

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COUNTRY LIFE IN AMERICA

VOLUME XX—NUMBER 6 July 15, 1911 PRICE, 25 CENTS $4 A YEAR POSTPAID

Mr. Harmon starting on his flight across Long Island Sound

FLYING AS A SPORT FOR AMATEURS

By CLIFFORD B. HARMON

Photographs by JAMES H. HARE, W. J. HEARFIELD, C. H. DETRICH, and others

THERE is no question that flying is a sport. It is one of the kingliest sports that has ever come upon the stage of human activity. It has in it no element of the commonplace. It is unusual in all its phases. The only thing it has in common with other sports is the element of risk. A pastime without a hazard can scarcely be denominated a sport.

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While flying for the COUNTRY LIFE IN AMERICA Flight Trophy, on my first attempt, and when about four or five miles from the starting point, my aeroplane seemed to lose speed and power, and from a height of about five hundred feet I started to drop as if I had suddenly gone into an immense well. There is where the skill of experience came in. Without a second to consider, I knew I must land. I shot my elevating plane forward as far as it would go in

Gentlemen, I did not go up before because I was afraid." Yet no matter whether anybody else goes up or not, Captain Baldwin will almost always be found flying his Red Devil around the course in the morning and evening.

Another time I asked him why it was that he always flew so low, and he turned to me and said, "Phil, there is a lump in my throat, which acts the same as a barometer; when I go up it presses on my throat, and the higher I go the harder it presses until I just can't go any further." Captain Baldwin is one of the few men who dares to confess that he is afraid of flying, because he knows very well that no one will believe him.

Although within the last few years public sentiment has turned greatly toward aviation, still, even yet, there are a few people who say that they cannot see any future to the science of aviation. When you stop to consider this, does it not seem just a little absurd to say that aviation has no future? Has any branch of human endeavor ever advanced so rapidly as that of aviation? While not more than ten years ago a person who professed an interest in flying was considered little less than a lunatic, yet to-day they are reducing the time of transit from city to city to one-half the time required by the very fastest methods of transportation available hitherto. Take, for instance, the remarkable flight from London to Paris in slightly less than four hours. This is only one instance of what is being done, and a thing which is bound to appeal to everybody is the reversal of the regular order with regard to speed. In an aeroplane the greater the velocity of the machine the greater the safety, and at tremendously high speed an aeroplane can go through the highest winds with perfect safety.

At the Garden City aerodrome. Mr. Wilcox (at the right) with helper, adjusting his radiator

One day, while arguing with a man on the possibilities of aviation, he tried to convince me that the air was too soft a medium in which to be able to properly manipulate a machine with safety — but upon one occasion this soft air, thrown from the propeller of a 70-horsepower engine, impressed itself upon me so strongly that I could hardly hold my head up against it.

At the present time one of the greatest drawbacks to the aeroplane as a vehicle of commerce is the speed necessary to give the planes the lift required to leave the ground. This means running along the ground at a high rate of speed in a very delicately built vehicle, with danger of its being wrecked while still on the ground. Especially is this true in alighting, when the aviator is unable to pick out a landing place with as much care as he would choose a starting place.

Before attempting to answer this objection, let us consider just what it is that gives the planes their buoyancy. The lifting of the planes is determined by a number of conditions, which may be changed at the will of the operator. If an aviator wishes to ascend he may do so by either one of two methods. He may increase his speed so that the planes will have a greater lifting capacity and the machine will rise, or he may elevate his front rudder and thus tilt the whole machine so as to present a greater angle of incidence to the direction in which he is flying, and so gain the desired ascending effect. The velocity of the air is necessarily taken with relation to the aeroplane, and it makes no difference what the relative velocity is between the air and the ground as far as the lifting effect on the planes is concerned; so that if we were to take a machine of the Wright type out when the wind was blowing at a velocity of about thirty miles per hour, it would be possible to ascend directly into the air without the aeroplane first getting up speed. That is to say the only requirement for ascending, considering the angle of incidence to remain constant, is the current of air passing under the planes with sufficient velocity to lift them. If now we could by some means absolutely control the velocity of the air passing under the planes without the necessity of accomplishing the same end by means of projecting the aeroplane through space, we would be able to rise and descend at any desired point, and at any speed with respect to the ground. This to a certain degree is the object aimed at with the heliocoptere, but with that there is always the danger of the motive power stopping, and the machine, not having the required surface, must then necessarily drop to the ground.

Another most important consideration is that of the power plant and the airlines of the machine. To-day we are handicapped terribly by inefficient motors and machines. The machine of the future must minimize head resistance and lift great weight for every horsepower used. The study of the lines of the air craft will become as important a one as it is now in boat building, and every effort must be made to reduce this head resistance and skin friction to as small an item as possible in order to economize in the power consumption.

One of the glorious features of aviation is the fact that it opens up an entirely new field of invention and investigation. The possibilities are tremendous, for every branch is a science in itself. There are the problems of motive power, the problems of propulsion, the problems of reducing the head resistance, and the study of curvatures, high velocities, and automatic regulation of balancing devices—each one independent of the other and calling for the united effort of thousands of minds.

On the whole, the science and practice of aviation seems to me to offer a sufficiently alluring field to any man, whether his gift be skill and courage, inventive and mechanical genius, or business capacity.

On a starless, moonless night, who could thwart a courageous smuggler on the border line between Canada and the United States, with a belt of diamonds around his waist on which the duty is $10,000?"

THE FUTURE OF FLYING—A FORECAST

By WALDEMAR KAEMPFFERT

Photographs by CHARLES WEIDNER and others; drawing by LEWIS PALMER SKIDMORE

NOT long ago a Wright biplane transported 200 pounds of silk from Dayton to Columbus, Ohio, a distance of sixty-five miles, in sixty-six minutes. A French firm has actually constructed a biplane having a carrying capacity of twelve passengers in addition to the weight of the machine itself. Are we to regard these exploits in aerial transportation and in aerial engineering as the harbingers of a new era? Are the locomotive and the steamship to be supplanted by the speedier aeroplane? Will there be great flocks of freight carriers winging their way across ocean and continent? Will the old problem of transportation be solved in a new way?

There were pessimists in the early days of the railway who could see no future in the locomotive steam engine; there were men in the House of Commons who retarded the development of the automobile for decades by passing an act which compelled the driver of a steam coach to warn all wayfarers of his approach by sending out in advance of him a man armed with a red flag; there were shipbuilders enough who prophesied the utter failure of the iron ship. Despite all these examples of forecasts that time has made ridiculous, the men who have given us the aeroplane will tell you that there is no immediate commercial future for the flying machine. Not so very long ago Mr. Orville Wright expressed the opinion that flying machines "will never take the place of trains or steamships for the carrying of passengers. My brother and I have never figured on building large passenger-carrying machines. Our idea has been to get one that would carry two, three, or five passengers; but this will be the limit of our endeavors."

It would seem easy enough to build a machine so big and to equip it with engines so powerful that a thousand tons could be carried if necessary. Such machines exist only in novels. It is an engineering impossibility to construct a machine of huge proportions. Why? The carrying capacity of an aeroplane depends on its spread of plane. To increase the load means so important an increase in spread that an unmanageable area of supporting surface would be necessary. In order to secure the strength required to hold this increased area in position an increased weight per square yard is entailed. Hence it is unlikely

"As a future commercial possibility the dirigible airship is far more promising than the aeroplane." In Germany there are already several regular passenger lines for travel and sight-seeing. The government weather bureau has installed a wireless service for airships, and municipalities are building airship docks

that aeroplanes carrying many passengers will be built in our time.

The burdens to be carried by the commercial flying machine of the future will be packages of small weight which must be transported at high speed at any cost. Some day it will be possible to step up to the window of a post office and say:

"One special air stamp, please."

The clerk will hand out a postage stamp bearing the engraved picture of a flying machine. The letter to which that stamp is affixed will be carried by the next United States Mail Aeroplane to its destination. So, too, express companies will carry valuables speedily, but expensively.

Because the flying machine is not destined to be a burden carrier, smuggling by air, however alluring it may be, is not likely to break down tariff walls and to thrust free trade on an unwilling manufacturing nation. Yet, on a starless, moonless night, who could thwart a courageous smuggler on the border line between Canada and the United States, with a belt of diamonds around his waist on which the duty is $10,000? His machine is a monoplane of the latest model. The propeller is given a quick twist. The engine sputters and whirrs. A throttle is moved. The machine rushes along the ground a hundred yards and then vaults into the air. Steadily the smuggler rises into the blackness. In a minute he is lost to view. Only the distant droning of his motor proclaims that he is on his journey. Heading for the United States, he crosses the American border half an hour after his departure. Even though his start may have been observed by a vigilant revenue officer, who can tell in what way his path lies through the air? On land he would have been confined to a definite railroad or to a certain highway, both watched. In the air he is as free as a bird.

Copyright by Charles Weidner.

Latham flying over San Francisco in his Antoinette monoplane. From this picture to the artist's fancy on the opposite page is not such a far cry, after all

All this seems very easy. Yet the Government will not be altogether helpless. The air smuggler will be matched with his own weapons. The revenue service will pursue him with flying machines of its own. If it cannot catch him it will at least watch where he is going and apprehend him when he lands. Moreover, the time is almost at hand when an air pilot will be compelled to pass an examination for a license, for which reason he will be more or less subject to government surveillance. If the pilot with license 5226 flies too often from Canada to the United States in nocturnal smuggling enterprises, he will sooner or later fall into the hands of a revenue officer. In order to defraud the Government on the grand scale of a fashionable dealer in paintings, of a highly respected wool merchant of our own time, the well-worn but less picturesque methods of falsifying invoices and bribing custom-house inspectors will always be preferred.

As a future commercial possibility the dirigible airship is far more promising than the aeroplane. To the size of the airship there is no limit. Indeed, the larger it can be built the more economically can it be driven, when we measure economy by ratio of carrying power to cost of operation. Just how large an airship can be constructed is a question of constructive engineering. In considering that question the late Prof. Simon Newcomb pointed out that economy is gained only when the dimensions of an airship are so increased that it will carry more than an ocean steamer or a railway train. To attain that end he estimated that it would be necessary to build an airship at least half a mile in length and six hundred feet in diameter. Such a vessel might carry a cargo of 10,000 tons or 15,000 passengers. Because the construction of so huge a craft is not an utter engineering absurdity, it is possible that our grandchildren will cleave the air in aerial leviathans; but that day is remote, to say the least.

Granting that the aeroplane will play its part in commerce only in the postal and express service, how will it appear to the eye? Picture to yourself a larger and heavier machine than we have at present, a kind of air yacht, weighing at least three tons, and built with a boat body decked in. Such is its capacity that it can carry three men easily. In flight it rushes through the air at speeds of 100 to 150 miles an hour, for the reason that high speed in flying, as Professor Langley long ago pointed out, means less expenditure of power than low speed. Its supporting surface is adjustable in area. When it starts it uses the full expanse of its huge planes; in flight it folds its planes until they become mere fins.

In such a machine explorations into unknown lands will be robbed of their perils. The hummocks of the Arctics, the jungles of Africa, the morasses of a country untrodden by the foot of man can hide nothing from the exploring aviator. Tasks which formerly occupied years

"A LARGER AND HEAVIER MACHINE THAN WE HAVE AT PRESENT, A KIND OF AIR YACHT, WEIGHING AT LEAST THREE TONS"

for their achievement will henceforth be accomplished in as many months, weeks, or even days. If Lieutenant Shackleton found the motor car of service in Antarctic exploration, what shall be said of the flying machine which speeds on its journey unimpeded by mountains of snow or grinding packs of ice? The character of the information gathered by the future explorer-aviator will be of greater scientific value than that which is at present so painfully collected. A Livingston or a Stanley, chopping his way through dense tropical vegetation, brings back no complete map of the region traversed. All that he can show is his itinerary — a mere strip of the new country. Mountains and rivers he indicates rather than charts. Instead of crawling over the face of our planet, the explorer will some day survey it from a height. He will see his Africa or his Asia spread out before him like an open book. His eye will sweep an area measuring hundreds of square miles in extent. The camera will record those topographical peculiarities which he came to note, and he will be spared the necessity of imperilling his life to discover the source of a river or the secret of some Tibetan Forbidden Kingdom.

Compared with this high-powered air vehicle of the near future, present-day automobiles creep. Ten years hence thousands of men and women will fly, and the experience will mean no more to them than a trip in a motor car. As a vehicle of sport the flying machine is destined to become what the bicycle was a decade ago. It is safe to predict that the gilded youth who will soon flit over our heads will order his 100-horsepower monoplane months in advance, so difficult will it be to supply the demand for flying machines when the craze for soaring through the blue is fairly launched.

"A vanishingly small speck among the clouds, hardly distinguishable from a bird."

You and I, seated together in our touring monoplane, cleave the air as we please, when that day dawns, unhampered by speed laws, restricted to no particular course. To those who gaze up at us wonderingly we are at low level a blur to the eye and a buzz to the ear, and at high levels a vanishingly small speck among the clouds, hardly distinguishable from a bird. In an hour or two we traverse a whole state. Storms hold no terrors for us: for we fly swifter than any hurricane. To us gales that drive present air pilots to cover mean nothing. We plunge through them in a mad dash, like a locomotive plowing through a mist, relying largely on speed for safety.

Our way is as definite as we choose. Government marks indicate our course. As we skim high above a town you see painted on the roof of a black gas tank the words "West Haven." With a glance at your air map you turn to me and shout into the ear trumpet, which I have strapped to my head so that I may hear you above the roar of the motor:

"West Haven. Steer south for Austin."

Two thousand feet up in the air the letters seem no larger than those on this printed page; yet they are thirty feet high. They are as buoys to a mariner.

Not only the more important communities that lie in our path are so designated, but also the more dangerous cliffs and structures that tower up in the ocean of air — dangerous not because the machine may collide with them, but because they are the atmospheric equivalent of shoals and reefs. Against every house, every wall of masonry, every hedge, there beats a silent, invisible surf of air that must be avoided as the master of a schooner avoids the visible roaring breakers of a rocky coast. When a cliff looms up I tilt up the horizontal rudder and rise high above those treacherous waves. Cliffs and mountains can be seen readily enough, but not those swirling downward currents, those maelstroms into which man and machine may drop like lead. Pitfalls such as these are designated on our air map by a distinctive sign and color. Mt. Stanley is marked with a bold red cross. Opposite that peak, which, both of us know, was the tragic undoing of three air men, the northern blasts of air are twisted into sucking whirlpools. As we near that dangerous peak, you glance at your map and shout:

"Mt. Stanley! Dead air! Look out!"

And I do.

The machine drops when it dashes into the whirlpool, as if it were pulled down by an unseen hand. I tilt the horizontal rudder down, so that we drop still faster, in order to increase our head resistance and to give the motor a chance to urge us forward. Paradoxical as it may seem we are saved from falling by falling. But then, the whole art of flying is more or less paradoxical.

In a breathless thirty minutes we have traveled fifty miles. The spire of the Episcopal church of Austin looms up. Farther on is a cluster of office buildings, hotels, and houses. The flat roofs of the larger buildings are mere landing-platforms for aeroplanes, projecting far beyond the walls like the eaves of an oriental temple. From aloft, the buildings seem curiously mushroom-like to the eye. On some of them the popular manufactured products of the day are blatantly advertised to catch the aeronautic eye. I steer for the Thornton Hotel, distinguished by a red landing stage overhanging some twenty stories of concrete. I sweep nearly a complete circle so as to approach from the southwest and strike the platform with a thud. The machine runs along the platform with the speed of an automobile on a hard macadam road. I press the brake pedal, and the machine stops full twenty feet from the netting that guards the northern end of the roof. A porter runs forward with a ladder, props it against the body of the machine, and helps us as we clamber out.

Flying machines at San Antonio, Texas, demonstrating their practical use in warfare during the recent manœuvres near the Mexican border

PRACTICAL USES OF THE AEROPLANE IN COMMERCE, TRAVEL, AND WAR

By HUDSON MAXIM

THE world has probably advanced more in the mechanic arts and the exact sciences during the past one hundred years than it had previously advanced in all the slow-moving eons of human history, and it is probable that from the stone age down to 1810, mankind had made less actual material and intellectual progress than has been made in the last single century. The marvels of accomplishment now follow one another in such rapid succession that our daily news would be tame without the looked-for recital of some wonder of human achievement.

In no field of endeavor has the inventor been a greater wonder-worker than in aviation, and nothing ever performed by man has more strongly appealed to the imagination than human flight.

But what will be the practical utility of aviation? Will the aeroplane ever become a safe and practical vehicle of travel, or are the limitations of its possibilities such that it will never be more than a plaything in hazardous sport, or a military machine, where the value of its service will be so great as to warrant its wide use in spite of an element of great risk?

I predict that in the near future — assuredly within the next decade — the commuting aeroplane will be a common sight. The aeroplane will be a great time-saver. The tiresome hours of the commuter spent on trains and trolley cars are always so many hours added to his day's work. The flying machine will change the weary coming and going to invigorating recreation and sport.

The touring aeroplane taking long cross-country flights will within the next ten years be a common spectacle, but we must not look to the improvement of the aeroplane alone to bring about such desired results, for attention must be given to the earth-road underlying the sky-way. There must be prepared lanes of cleared spaces radiating from all large cities and connecting all important centres of population, or at least there must be frequent cleared spaces, sufficient in number, and near enough together, to enable an aeroplanist to effect a safe landing when at any time his engine goes wrong.

The provision of such cleared spaces with hotels, garages, and repair shops should furnish such lucrative business as to lead to their establishment by private enterprise on the main lines of aerial travel all over the country, and in time such alighting areas or cleared lanes and spaces will be provided by the state governments, just as the common highways are to-day provided for the horse-drawn vehicle and the automobile.

Land, like other commodities, increases in value with the increase in the number of persons who want it. If the speed of railroad trains plying back and forth between New York and outlying country districts were to be doubled, without additional risk, so that commuters could reside twice as far away without increase of the time spent in travel, real estate fifty miles distant would at once be worth as much as real estate twenty-five miles away now is.

Thus, it may be easily seen that the suburban property values, when the aeroplane shall come into general use, will be so greatly enhanced as to make it evidently much to the interest of all owners of suburban property to cause to be enacted such laws as shall provide the maximum of safety to the aviator.

The aeroplane has a twofold advantage over the railroad train: it can travel at greater speed, and can go as the birds fly, on straight lines.

The aeroplane will never become much of a freighter. It will never pay to carry farm produce to market on an aeroplane. But, for the transportation of first-class mail matter, the aeroplane should be very useful.

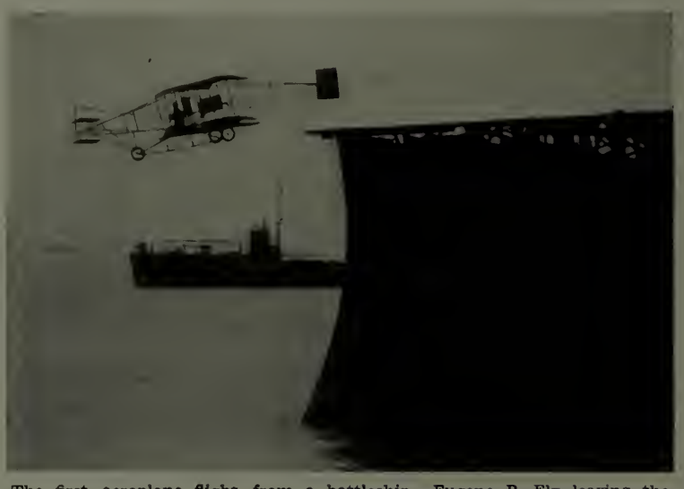
It is not necessary, in this article, to point out what the needed improvements are to render the aeroplane a safe and practical vehicle of travel, which will enable the aviator to laugh at eddies and swirls of contrary winds. Things yet more difficult that have already been accomplished in aviation are sufficient warrant that the required improvements will be made.

Much is being done, and much will continue to be done, by the sportsman to develop and perfect the aeroplane; but it will be the exacting requirements of government boards to adapt the machine to the exigencies and uses of war, that will, more than anything else, compel aviation to develop on practical, scientific lines.

Some feats which have recently been performed by Glenn H. Curtiss in the service of the United States Govern-

ment, and by Lieut. Eugene B. Ely and J. A. D. McCurdy, are strong indications that wonderful things will be performed in the service of Mars by the inventor and the daring aviator.

The recent flight by Lieut. Eugene B. Ely from the deck of a battleship on the Atlantic coast and his flight some weeks later, alighting upon the battleship *Pennsylvania* in the Bay of San Francisco, was a very practical demonstration of the possibilities of the aeroplane in war. Still more significant was the flight of Glenn H. Curtiss, with his water-riding attachment to the Curtiss biplane, rising from the water in San Diego Bay, flying about, and then relighting upon the water.



The first aeroplane flight from a battleship. Eugene B. Ely leaving the cruiser *Birmingham* in Hampton Roads, using a Curtiss biplane

In order to predict the part that the aeroplane is destined to play in warfare, it is necessary to look at the military strategics of the past and the present, and the needs that have led to innovations, especially to inventions to meet those needs.

In olden times, when warring hosts armed with swords, spears, and battle-axess ought to battle, they usually met by mutual consent upon some open field, preferably a flat plain, where they could manipulate their forces with as little hindrance as possible from forest growth or uneven character of the ground. There was little scouting or manœuvring for positions. Position counted for less then, and sheer brute force and the numbers engaged counted for more.

There was no parley of cannon thundering from hill to hill. There were few siege operations for the capture of mere positions. Sieges were mainly directed against cities. The enemy had to be met and fought in the open or allowed to ravage the country while the defenders shut themselves up in their cities. When either side was vanquished in the close-order fighting of the time, the conquerors were already at the heels of the conquered and in their fury cut them down without mercy, with the result that the loss of life was often enormous.

Later Lieut. Ely made a flight from shore to the deck of the battleship *Pennsylvania* in San Francisco Bay. A special landing-stage was constructed

Upon the invention and introduction of firearms, with the ability to strike at long range from behind cover or from other positions of concealment, military tactics were altered to meet the requirements of the new condition of things. From the commanding advantage of a hill the movements of an enemy could be observed and his attack made difficult, while the forest thicket and the ravine offered advantages for ambush. War became more of an engineering proposition, and there was more for the spy, the scout, and the raider to do.

In proportion as the range, rapidity of fire, and accuracy of guns have been increased, opposing armies have been ranged farther and farther apart, and dispersed over wider and wider areas. As a result, the conduct of a battle between two large armies has become a very highly complicated, scientific procedure, requiring a vast amount of engineering and observation equipment for the transmission of intelligence from quarter to quarter on the field.

The dispatch-bearer, mounted upon the swiftest horse, is now far too slow a messenger, when the firing line may be so long that it could not be traveled in a hard day's ride.

Telegraph and telephone wires must lace and interlace the battlefield in all directions, making communication a matter not of a day, or even of hours, but of moments. It is now of the utmost importance that information, immediate and accurate, be secured concerning an enemy's positions and every movement. For this purpose the aeroplane is admirably adapted.

In the wars of the future, for days previous to any great battle, aerial scouts will ride the sky in all directions, making observations and taking photographs. Both sides will have their aerial pickets out, and there will be many a hot encounter between contending air-craft, precursing the impending battle on the earth below; and the earth fight will often be predetermined by the sky fight, which will give to one side the enormous advantage over the other of knowing all their positions, observing all their movements without their being able likewise to observe and know the positions and movements of their adversaries, who have won the preliminary aerial battle.

As the command of the sky will be such a very important factor in the command of the battle as a whole, there will be a corresponding preparation for the aerial contest which shall give that command. There will be the very swift aeroplane, intended for high and very rapid flight, which will depend upon its height and speed for safety, and of which the object will be mainly to make observations.

Then there will be the aeroplane destroyer, speedy, too, but armed with weapons for the destruction of the enemy's observation machines.

Batteries for the destruction of aeroplanes will be mounted at many points in front, in middle, and in rear, along the whole line of battle of the future army, whose purpose will be to coöperate with the aeroplanes in keeping the immediate sky clear of the spying air-craft of an enemy.

The aeroplane will never be a success pitted against ground batteries. There has all along been much misconception about the destruction that aeroplanes would be able to do by dropping dynamite upon armies, warships, coast fortifications, and cities. This has been due to an exaggerated popular idea about the force and action

of high explosives. When unconfined, dynamite is very local in its action. When confined, however, in a strong steel projectile, it will blow the housing of it into many thousands of fragments and effect great destruction inside a ship or in the casement of a coast fortification, but a bomb could not be made to penetrate to these places merely from dropping; and then, also, accurately to direct the fall of a bomb from a rapidly moving aeroplane at varying heights is so difficult as to be almost impracticable.

In future wars aerial scouts will ride the air for days before any great battle to make observations and take photographs of the enemy's position

A high-explosive bomb, although it should contain five hundred pounds of dynamite, dropped upon the firing line of an enemy, would do comparatively little damage. Men standing close to where it struck would probably be killed, but the destructive action would be very local. Men might be stunned a hundred feet from the explosion, but few would be killed at that distance.

A 500-pound bomb, however, dropped into a narrow street would be likely to blow in the walls of the buildings on either side, and if dropped in such wise as to enter to the cellar or lower rooms of a large building before exploding, as down an air shaft, it would be very destructive to that building, but would have little or no effect upon adjacent buildings.

We may, therefore, readily perceive that aeroplanes will not be very efficient against lines of troops upon the battlefield; while quick-firing guns, able to throw from forty to fifty shrapnel shells per minute, armed with a time fuse set to burst in flight just before reaching an aeroplane, liberating a lot of bullets and shell fragments, moving forward with great velocity, in an enlarging circle, will be able to keep the near sky well cleared of the aeroplanes of an enemy — at any rate, will be able to prevent them from coming in sufficient numbers and near enough to do very much damage either to troops or fortifications.

Aeroplanes will be able, however, to come near enough for purposes of observation, since an aviator can take very accurate observations from such a height as to be pretty well beyond the range of ground batteries, or, at least, from such a height as to render it exceedingly difficult to hit him.

The main uses for flying machines will be in reconnoissance, in combating and destroying the reconnoitering aeroplanes of an enemy, and in the carrying of scouts and raiders. It has already been demonstrated perfectly practicable to construct aeroplanes capable of carrying three men with the necessary small arms, accoutrements and explosives for the raiders' outfit.

In large numbers, such aeroplanes can easily be constructed at a cost not exceeding twenty-five hundred dollars. Thus, an army of a hundred thousand raiders would be able to invade an enemy's country with thirty-five hundred aeroplanes at about half the cost of a modern dreadnought.

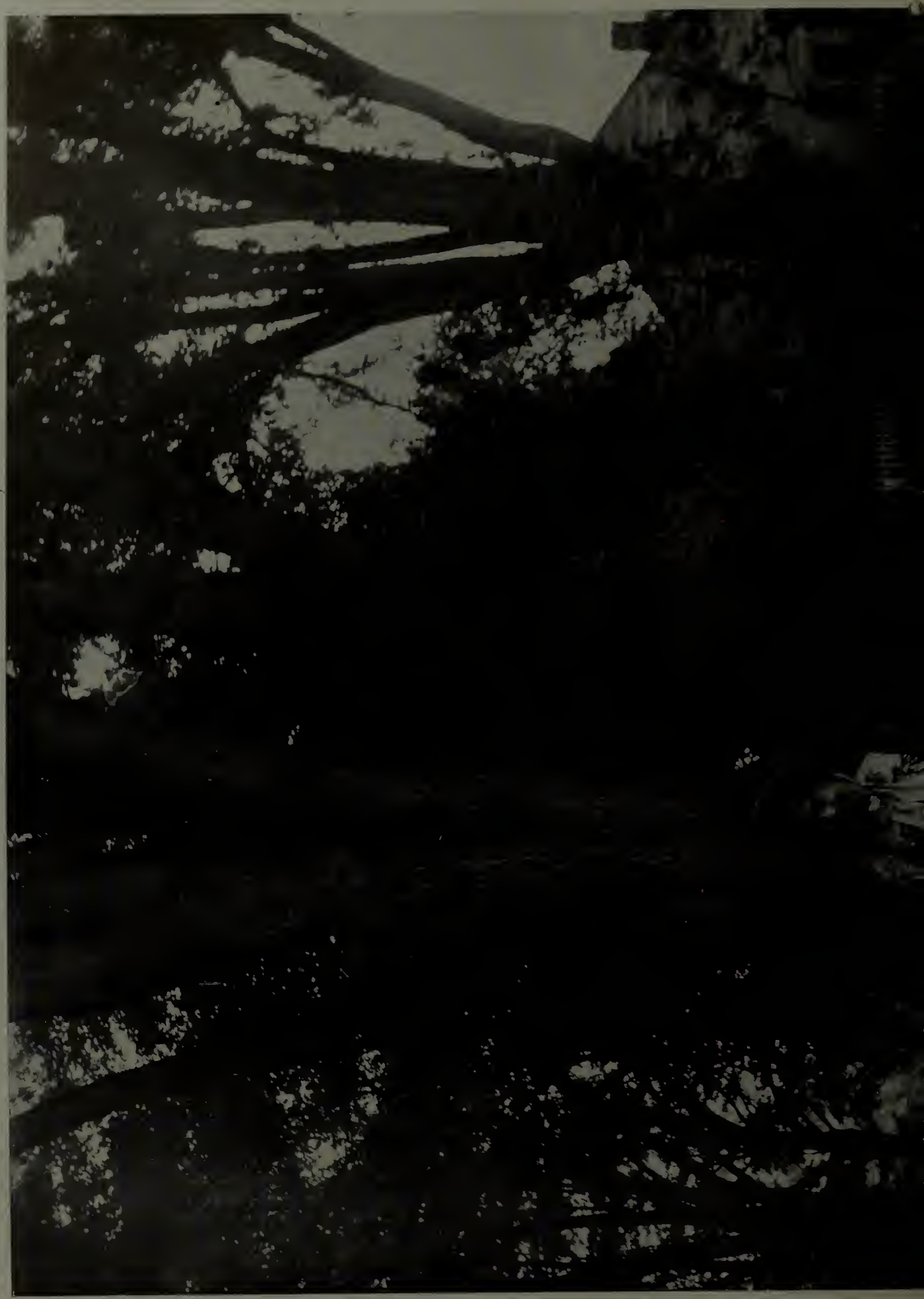
Such an army of raiders, alighting anywhere upon the unprotected inland country, would be able to do enormous damage by the destruction of railroads, powder-mills, magazines, arsenals, store-houses, and by levying upon moneyed institutions. In future wars it will be found very difficult to safeguard any nation's frontiers so as to prevent armies of aerial raiders from avoiding the vigilance of the sky-watchers and entering the unprotected interior.

Heretofore, since the introduction of firearms, wars have been largely conducted by a series of siege operations. Battles have been fought to win positions, for all approaches were upon the plane of the earth's surface. But aviation takes warfare into the third dimension, and the flying machine can overgo all positions. The over-arching dome of heaven offers an enormous three-dimensional field for infinite varieties of attack, and every position, high and low, under the sky, must be constantly cruised, watched, and defended against the aerial invader. Every hill-top and mountain height of the interior country must be provided with aeroplane-destroying batteries, and with aeroplane destroyers attuned and perched ready for flight; and the whole populace must be armed and trained to meet the exigencies of invasion.

The lesson is plain, and the remedy is obvious. The only way to safeguard any country to-day is to be so prepared as to be able to offer an efficient defence against an aerial invasion of an enemy.

An actual scout in war time. Rene Simon returning from his famous scouting trip over the camp of the Mexican insurrectos on February 11, 1911

Lieut. Parmalee and Lieut. Foulois in a Wright aeroplane over the camp of United States troops at San Antonio.



Photograph by Frances and Mary Allen

GOING TO MEETING

A French hydro-aeroplane that is being used for experimental purposes. It is a biplane with a barrel tail, mounted on a catamaran

A triplane of great lifting power which Curtiss used in his experiments but discarded. Note the central float and the buoys at the sides

BIRD-MAN AND DUCK-MAN

By GLENN H. CURTISS

IT IS my firm belief that the hydro-aeroplane represents one of the longest and most important strides in aviation since man first learned to fly. It opens up a new field of usefulness for the aeroplane, wondrous in its possibilities and undreamed-of by the most optimistic enthusiast a year ago. It robs aviation of half its dangers and adds to the pleasure of flying a hundredfold. As an engine of warfare it widens the scope of the aeroplane's utility beyond the bounds of the most vivid imagination and makes possible its adoption by the navies of the world.

The hydro-aeroplane can fly sixty miles an hour, skim the water at fifty miles, and run over the earth at thirty-five miles. It marks the conquest of three elements — air, water, and earth. Driven over the surface of the water, the new machine can pass the fastest motor-boat ever built, and will respond to its rudder more quickly than any water craft afloat. Its appeal will be as strong to the aquatic as to the aerial enthusiast.

Flying an aeroplane is thrilling sport, but flying a hydro-aeroplane is something to arouse the jaded senses of the most blasé. It fascinates, exhilarates, vivifies.

Fear, the one thing that has laid a restraining hand on the sleeve of many a man eager to fly, need no longer be a hindrance to the progress of the aeroplane's popularity. The timid may become successful aviators as well as the venturesome, the man of business as well as the practical mechanic.

Whether soaring above land or sea, the operator of a hydro-aeroplane may always feel sure of a safe landing. If there be no land suitable for alighting upon, there must be water. Either will do for the hydro-aeroplane.

The mobile character of this new craft of the air will make it the safest and most popular of all aeroplanes. It makes long, over-water flights possible — flights that may be stretched from time to time until even the broadest ocean will eventually be spanned and continents brought closer together.

These things the average man does not appreciate to-day; yet they are well within the range of possibility. As a people we are prone to accept, in this day of wonderful progress in invention, those things that add most to our comfort and pleasure without halting to wonder at them. The aeroplane, one of the greatest achievements of man, has thus been "adopted" without fuss or feathers and is fast being adapted to our everyday needs. The hydro-aeroplane, the latest development of aviation, is still so new to the world that it is a curiosity, but it, too, will quickly find its field of usefulness — more quickly, indeed, than did its predecessor. Its field will be broader because of its mobility, and I believe it will give fresh impetus to the art of aviation.

The idea of an aeroplane that could fly from the surface of the water and alight thereon with safety, was not a sudden inspiration with me. I had long had it in mind. In fact, I had made some experiments in that direction on Lake Keuka, N. Y., soon after I had succeeded in flying my first aeroplane, the *June Bug*, at Hammondsport. Lack of time, however, prevented my pursuing the problem to success until almost two years later.

The advantages of such a machine came forcibly home to me when I was making preparations for my flight from Albany to New York City for the New York *World's* $10,000 prize in May, 1910. On that flight I followed the Hudson River the entire distance because I thought it safer to fly over an even water surface than over a rough and dangerous series of hills and mountains. I reasoned that if I were obliged to make a sudden landing it would be less dangerous to drop into the water and be picked up after a wetting than to be deposited in a tree top or upon a mountain side. For this reason I equipped the *Hudson Flyer* with pontoons to sustain it in case it should fall into the water.

If pontoons could be carried that would hold an aeroplane safely on the surface of the water, why would it not be possible to devise a permanent float that would enable it to get up enough speed to rise from the water? With this idea firmly fixed, I only awaited the opportunity to prove the feasibility of it. That opportunity came during the past winter. I had invited the Government to send officers of the Army and Navy to San Diego, Cal., to be trained to operate an aeroplane, and I determined to work out the problem of a water machine at the same time.

The conditions at San Diego were as nearly ideal for such experiments as could be found. There was vast surface of smooth water, a genial climate, even in winter, and a minimum of wind. Instead of interfering with the work of training the officers who had been sent there by the Government, I believed the development of a machine capable of flying from and landing upon the water would greatly aid in the task. To take them up as passengers in a machine that could be flown over water entirely and at a very low altitude with perfect security, would be safer, than in one that must keep over land altogether.

January was well toward its closing days before the first machine was made ready for the initial test. It proved unsuccessful. This did not surprise me. The best I had hoped for was to gain some knowledge of the sort of float necessary to support the aeroplane and to study the action of the equipment when under the driving power of the propeller.

Day after day, for a period of almost two weeks, we dragged the aeroplane down to the water's edge and set it afloat on the placid surface of San Diego Bay. As often we drew it out of the water after unsuccessful attempts to make it rise from the surface into the air, and put it back in the hangar upon the beach. But each failure added to our knowledge and brought success nearer.

I say "we" because I was ably and enthusiastically assisted at every stage of the experiments by Lieut. Theodore G. Ellyson of the Navy, Lieutenants Paul W. Beck, John C. Walker, Jr., and G. E. M. Kelly, of the Army, all of whom had been detailed to learn to fly, and by Hugh A. Robinson and C. C. Witmer, of my camp.

Our experiments being on the water naturally took us into the water a good deal. There was no thought given to wet clothing or cold feet. Bathing suits were the rule with the men for hours each day. Notwithstanding the genial nature of "sun-kissed San Diego's clime" there were times when chilled bodies would have welcomed the garb of a less poetically celebrated but more northerly climate. But discomfort and delayed success did not discourage the men who daily waded or swam the waters of Spanish Bight or watched and worked upon the shore. On January 26th success finally came. On that day the first aeroplane in the brief but thrilling history of aviation rose from the water, flew in circles and, returning, alighted upon the water. My theory had thus been proved, but there were many things remaining to be solved. These were merely questions of time and labor.

In our experiments we had changed the equipment from day to day, adding something one day only to discard it the next; cutting down weight and surface here and building it up there. With each day's changes came improvement. There were scores of little things that cropped up to annoy and delay us. Perhaps it was the float that was too heavy, or else it sprung a leak and became waterlogged; or maybe it was the flying spray that chipped the whirling propeller. One day the aeroplane showed a tendency to dive when driven by the engine; perhaps the next day it would drop at the "tail."

All these faults were overcome, and when we hauled the float-equipped aeroplane out of the hangar on January 26th we felt that we would now get results. We got results, and rather unexpectedly, at that.

There were no crowds gathered around to witness the first successful flight — none other than the army and navy officers and members of my own staff. I had not expected to make a flight at that time and had so informed the newspaper men. For that reason there were none of these ever-curious gentlemen on hand to herald the news to the world.

I climbed into the aviator's seat on that day with the feeling that the aeroplane would

certainly get up in the air when I wished, but that I would only try it out on the water to watch the action of the new float and the hydro-surfaces.

When Lieutenant Ellyson spun the propeller and set the engine going, I turned the machine and headed into the wind. It ploughed through the water rather deeply and heavily at first, but as the speed increased, higher and more lightly, until the float barely skimmed the surface of the bay. I tilted the control to watch the action, and instantly the machine leaped into the air like a frightened gull. So suddenly did it rise that I was taken somewhat by surprise.

I kept the machine up for perhaps half a mile, then dropped lightly down on the water, turned around, and headed for the starting point. The effect of that first flight on the men who had worked, waited, and watched for it, was magical. They were now running up and down the beach, throwing up their hats and shouting their enthusiasm.

Turning the machine to go with the wind I headed out into the bay toward the city of San Diego, and got up in the air more easily than the first time. I took it out perhaps half a mile then turned twice to see how it would act with the rather clumsy-looking float attached beneath. Everything went smoothly. I was satisfied and came to a landing within a few yards of the shore where a few minutes before we had launched the amphibious craft.

The naval repair ship *Iris*, which lay about a mile off in the bay, caught sight of the hydro-aeroplane just as I was about to alight on the water and set its siren screaming in one long, exultant blast. It was followed by the sirens of other craft in the bay until it seemed that all of San Diego had wakened to the new achievement in aviation.

There were flights almost daily thereafter. Some of these were for the purpose of trying

Hauling the machine down from the hangar

The start. Getting up speed on the surface of the water

Rising from the water

Keeping at a low level without danger

Dropping down to the surface again

Landing on the water with a landward rush

The finish. Slowing down, with the power off.

Ready to be hauled back to shelter. This is the *Traid;* note the wheels.

GLENN H. CURTISS IN A HYDRO-AEROPLANE FLIGHT ACROSS SAN DIEGO BAY—THE ACME OF EASE, COMFORT, SAFETY, AND EXHILARATION

out new floats, the general outline of which was radically changed after the first successful trial. Others were taken with the Army and Navy officers as passengers — a part of their course of training. I found the hydro-aeroplane well adapted to passenger carrying. With the addition of plane surface it showed remarkable lifting power and great steadiness in the air. I found it easier and safer to use the hydro-aeroplane in these passenger-carrying excursions than the standard aeroplane, and it was far more popular with the officers.

Then, too, I will confess that I got more pleasure out of flying the new machine over water than I ever got out of the aeroplane over laud. I had given up exhibition flying some time before going to San Diego, and had made up my mind to fly only when it was necessary to the carrying out of development work. The hydro-aeroplane's success rather weakened that resolution, however, and I found myself forming a decided preference for the water flights.

It is evident to the most casual observer of a flight by a hydro-aeroplane that the danger of aerial navigation is greatly lessened. It doesn't require an expert aviator to determine that.

On February 17th I was able to carry out an interesting experiment with the hydro-aeroplane in connection with the Navy. The big armored cruiser *Pennsylvania*, the ship on which Ely had made his sensational landing at San Francisco a month before, was lying in San Diego harbor, and Rear Admiral Thomas, commanding the Pacific fleet, and Captain Pond of the *Pennsylvania*, very willingly lent assistance in the experiment. This was to fly over to the ship, alight alongside and be hoisted aboard, and then dropped overboard and fly back to the island.

Without any special preparation on shipboard, with the simple use of the big hoisting crane and a sling fixed in the top of the hydro-aeroplane, the experiment was successfully carried out. I flew over to the ship, alighted alongside, was lifted aboard in the machine and deposited on the forward superstructure deck, all within fifteen minutes. To drop the hydro-aeroplane overboard, rise from the water and fly back to the experimental camp on North Island required less than ten minutes. Thus in less than half an hour a thorough demonstration of the adaptability of the hydro-aeroplane to the needs of the Navy was carried out.

Curtiss and his hydro-aeroplane being hoisted to the deck of the *Pennsylvania* after flying swiftly across the bay and alighting gently alongside

A few days later we affixed wheels to the hydro-aeroplane, in addition to the hydro-surfaces, and successfully demonstrated its ability to start from the land and alight on the water, or to reverse the operation, arise from the water and alight on the land. It was then that it became known as *The Triad*, having conquered air, land, and water.

A great field is open to the hydro-aeroplane, or Triad as it will very likely be called. It may compete with motor-boats as a water craft, or in the air with the fastest aeroplane. It can start from the land on its wheels, and thus launch itself on the water where there is lack of room for rising from the land. Likewise it can be run out of the water and up on the beach on its wheels.

Its double qualities as a water and air craft make possible flights that would not be attempted by the aeroplane, and its appeal will be particularly strong to those who live along our great rivers, lakes, or sounds. The lack of wide stretches of open and level country for the beginner to make practice flights with safety in an aeroplane, has discouraged its more rapid development.

These objections do not hold against the hydro-aeroplane. It will be safer for the amateur to make practice flights from the water — safer for the machine and safer for the aviator. Every large body of water offers ideal conditions for the man owning a hydro-aeroplane.

A flight to Albany up the Hudson, or over Long Island Sound and across country to Newport, will soon be a favorite jaunt of the country gentleman owning a hydro-aeroplane. There will be none of the unpleasant features of a trip by rail to near-by summer resorts — no dust, no crowding, and no waiting for trains. It will be simply a matter of rolling the hydro-aeroplane out of the hangar, launching it from the earth or from the water and rising high or sailing low over land or sea, breathing the fresh air that rejuvenates, and viewing the landscape with an interest and appreciation that comes from no other sport on earth.

HOW TO BUILD A GLIDER

By HAROLD S. LYNN

Photographs and drawings by the author

THE present-day aeroplane is an expensive luxury but its younger brother, the glider, as will be shown in this article, is within the reach of any one who has a few brains, ordinary tools, and twenty-five dollars — less than the cost of a good bicycle. The glider is much safer than a mechanically-propelled aeroplane, and for short distances will fly just as well as an aeroplane with a motor in it.

These motorless planes were employed by such aviators as Curtiss and the Wright Brothers in their experimental flights before they ever attempted a flight in a motor-driven aeroplane. The standard glider, which is the safest and best is of the biplane type, and I shall follow this type closely, giving one or two innovations which have been adjudged improvements over the old style.

The lumber will cost in the neighborhood of ten dollars, and the aluminum sockets five, thus allowing us a margin of ten dollars to cover the cost of bolts, wire, cloth, and incidentals. If you wish to succeed you must follow the diagrams and directions closely, as they are based on actual experiments.

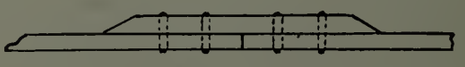
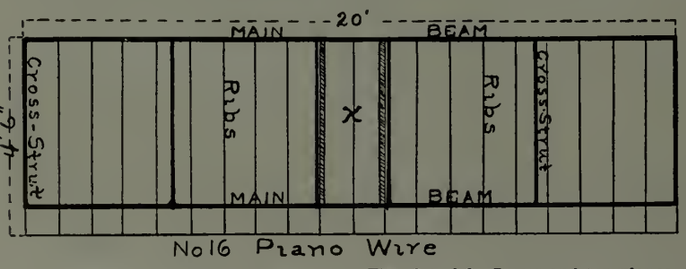
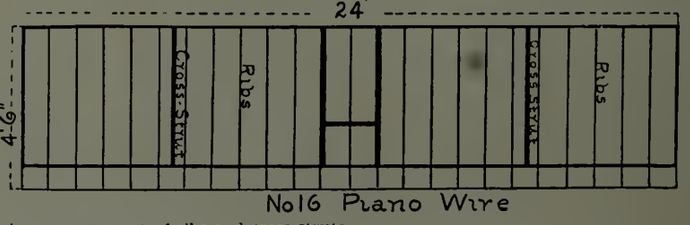


Fig. 1. Joining two short pieces to form a long strip

Your wood must be clear, straight-grained spruce and free from knots. With this in mind,





Figs. 2 and 3. Lower and top planes, showing arrangement of ribs and cross-struts

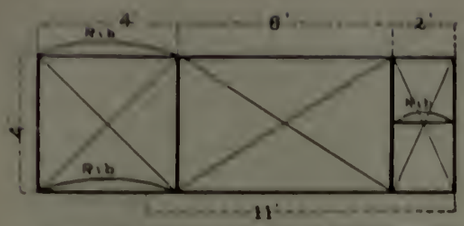


Fig. 4. Showing wire bracing and vertical rudder

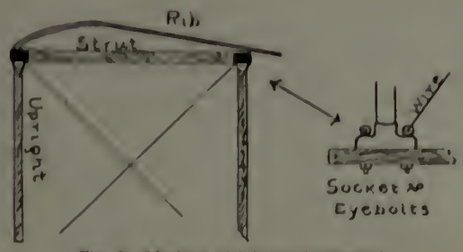


Fig. 5. Method of joining framework

Fig. 6. Diagram of vertical and horizontal rudders

go to a lumber yard and select the following material:

4 struts ¾ in. thick, 1¾ in. wide by 12 ft. long
4 spars ¾ in. thick, 1¾ in. wide by 12 ft. long
12 struts or uprights ¾ in. thick, 1¾ in. wide by 4 ft. long
12 cross-pieces 1 in. thick, 1 in. wide by 4 ft. long
46 ribs ⅛ in. thick, ¾ in. wide by 4 ft. 6 in. long
2 arm-rests 1 in. thick, 2 in. wide by 4 ft. long
2 rudder sticks 1 in. thick, 1 in. wide by 11 ft. long

You will need some extra 1 x 1 in. strips for constructing the tail, or rudders.

Next procure two dozen sockets as shown in Fig. 5. These are of an aluminum alloy and can be procured from any aeronautical supply house. You will also need several dozen stove bolts of different lengths, all of which should be ¼ in. in diameter. All bolts must be fitted with washers on both ends.

A practical glider built according to the directions given in this article

Before you start assembling the glider, round off the corners of your wood and sandpaper it well. When this is done the wood should have a coat of oil and then an application of shellac. This gives it a glacé finish and cuts down the wind resistance.

The main planes should be put together first. Study Figs. 1, 2, 3, and 7 carefully. It is very hard to get clear spruce in long strips, therefore it is necessary to join shorter pieces in the manner indicated in Fig. 1.

You will note that the top plane in Fig. 3 is 4 feet longer than the lower plane shown in Fig. 2. This is not shown in the photographs as it is not of common use. Its object is to help maintain lateral stability, and make the glider steadier while in the air, as this form acts like a pendulum.

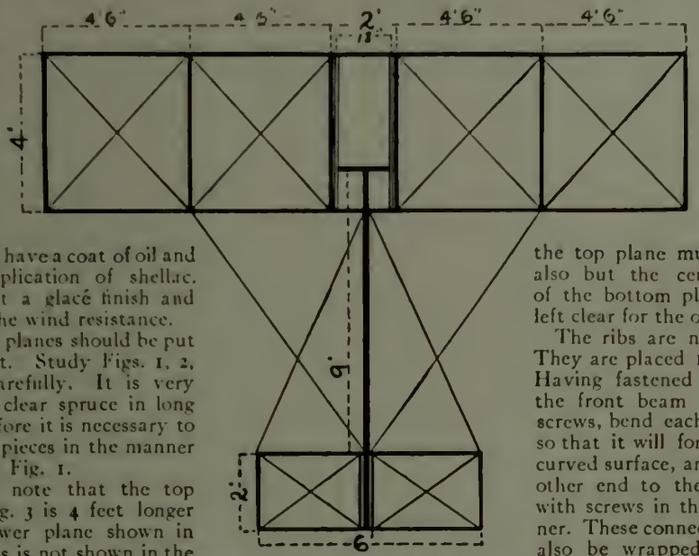


Fig. 7. Ground plan of glider showing bracing and horizontal rudder

Join your four 10-foot strips so that they form two 20-foot strips or spars. (See Fig. 1). Lay these two spars out and bolt six cross pieces to them, placing them 4 ft. 6 in. apart on each side, the two centre ones being placed 2 feet apart.

When this is done, wire the four sections of each plane diagonally as shown in Fig. 7. The 2-foot centre space of the top plane must be wired also but the centre section of the bottom plane must be left clear for the operator.

The ribs are next put on. They are placed 1 foot apart. Having fastened one end to the front beam with small screws, bend each rib enough so that it will form a slightly curved surface, and fasten the other end to the rear beam with screws in the same manner. These connections should also be wrapped with shoemaker's thread, which should be waxed. When the ribs are in place they will extend over the rear beam four or five inches. All the ribs must have the same curvature and be in line with each other. Now fasten No. 16 piano wire along the rear ends of the ribs as shown in Figs. 2 and 3. The top plane is put together in the same manner except that the cross pieces are placed 5 ft. 6 in. apart instead of 4 ft. 6 in. The centre section in the top plane is wired and a rib is placed in the centre. The mark X in Fig. 2 is to indicate that the rib shown there is not used in actual construction.

When you have your two planes together they are ready to be covered. Plain unbleached muslin is as serviceable as any cloth, and you will need about fifteen yards to cover all.

After sewing together two sections large enough to cover both planes, begin by tacking the cloth on the underside of the front beam. Next, stretch it back over the front beam and ribs and around the wire, where it may be sewn or clutched with eyelets. The muslin is next secured to the ribs with brass-headed tacks spaced about three inches apart. It is advisable to use tape along the ribs under the tacks as this will prevent the cloth from ripping or tearing loose. The centre section of the lower plane is of course left open to accommodate the body of the operator.

The planes may now be connected with the uprights and wired. The aluminum sockets are spaced the same distance apart as the cross-pieces on the lower plane (See Fig. 7). The uprights are fitted into these sockets and the planes are wired together, the wire being fastened to the eyebolts and running diagonally as shown in Figs. 4, 5, 7, and 8.

Fix the two short crosspieces by small bolts into the two centre crosspieces in the top and bottom planes, and the two arm rests (see Figs. 2, 3, and 7), and the main part of your glider is complete. I do not wish to convey the idea that the tail or rudders are unnecessary, for they are the most important feature of a glider or aeroplane. It will not be necessary

(*Continued on page 62*)

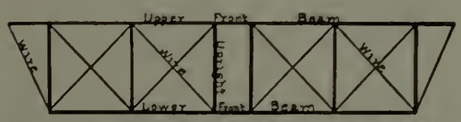


Fig. 8. Front elevation, giving arrangement of wiring and uprights

The two end pictures show a glider in flight. Note the positions of the body to keep balance. The glider in the centre was constructed by three Hammondsport boys

Copyright, 1908 by Benne

Curtiss's *June Bug* at Hammondsport, N. Y., in 1908. This was one of the earliest successful flying-machines

Hoxsey in a Wright biplane in 1910—a machine similar to the earlier Wright models. Two years ago the biplane was the only form we Americans knew

THE SCIENCE OF AERONAUTICS TO-DAY

By PROFESSOR DAVID TODD, of Amherst College

I HAVE many times been struck by the lack of definite knowledge which many people willingly exhibit as to the radical differences in type of the various machines for navigating the air.

A year ago when Mr. Leo Stevens and I made our midnight trip in a balloon from North Adams to Montreal, some of those who gathered around us after landing remarked that they had seen the balloon in the air early in the morning and had watched our gradual return to earth. One gentleman, apparently more intelligent than the others, stepped forward and asked if we intended returning home to Massachusetts in the balloon!

On another occasion, when many gentlemen of high average intelligence, instructors and professors in a great university, were considering the question of permitting students to take trips in a balloon, it became quite obvious, as discussion went on, that scarcely half of them could be said to know the real difference between a dirigible balloon and an aeroplane. All spelled certain disaster.

So I have thought it perhaps worth while to devote a few words to explanation in the simplest possible fashion of the real differences between the several types of aerial craft that are now in use, and those likely soon to be. A pond, a swimming-pool, or even a bath-tub, with a few common trinkets, are all that is necessary.

Suppose a piece of soft pine has been soaked in water for several days, until quite water-logged; if left alone it will almost sink to the bottom. Clearly the weight of the stick with the water in it is very nearly equal to that of the amount of water it displaces when completely immersed. Now bare the arm and push the stick to the bottom of the tub; it will very slowly rise, and directly upward, to the surface of the water. This relation of stick to water is exactly that of the *free balloon* to the atmosphere in which it rises quite majestically, never "shooting into the air," as local narratives of balloon ascensions usually state. Obviously the stick has no power to travel horizontally of itself; it can simply rise or fall in the water. But if the water is stirred about, so as to form a current anywhere within the pool or tub, the stick travels around with about the same speed that the current does.

Now put a fish into the pool and watch what he does. He is able to do everything that the stick does; he can even go against the current, and up or down at will by means of his vital motive power. The fish, then, may be taken as representing the type of aerial craft known as the *dirigible*. That is to say, a free balloon of suitable shape, to which is superadded the ready means of increasing or decreasing its buoyancy; also engine power for driving it through the air horizontally.

Now let us attach a small piece of a fan or a short quill radially to a little bit of metal, weighing perhaps an ounce or two, and throw this into the pool. We find that it descends through the water, turning about a vertical axis and twisting around as it descends, much like the seeds of a maple tree. This suggests a third type of aerial craft often called technically the *helicopter*. It is a sort of whirling aeroplane; and much of my time years ago was spent in experiments with small models of this character. As is seen by the descent of the little metal model to the bottom, it is apparent that it represents a heavier-than-air machine, even one heavier than water; but by applying powerful motors to such whirling aeroplanes, and mounting them in pairs revolving in opposite directions, it is easy to see that heavier-than-air machines having great speed and transporting power may be evolved. In point of fact, my experiments of 1891–94 indicated quite clearly that this may eventually be the most efficient of all types of machines for aerial navigation. The necessary power was not then available, nor, indeed, is it now, even with the highly efficient internal-combustion engines now made. But it is quite possible to see that engines other than gasolene, of high power and efficiency, may soon be invented which will enable such machines not only to rise almost vertically in the air as most of the birds do without difficulty, but also to stand absolutely motionless in a given place, as the king-bird readily can, and as the humming-bird does constantly.

The fourth type of aerial machine may be illustrated in this simple fashion. Suppose a small wild duck were to fly into and through the water in the pool. Observant naturalists have for years been cognizant of the fact that diving birds find escape from the hunter by disappearing beneath the surface of the water, only to come up several hundred feet away, and in so short a time that they could have made the transit from one point to another only by actually flying through the water. The flying of such a bird through the water is of course not essentially different from the ordinary

Hubert Latham flying in his 16-cylinder, 100-horsepower Antoinette monoplane at Belmont Park last October.

The Bleriot type of monoplane, flown by the late John B. Moisant. This form approaches as near to the scientist's ideal as any

Henri Farman in the Voisin biplane at Brighton Beach in 1908. This was the first French machine to become familiar to us

De Lesseps rising with a passenger in his Bleriot. The Gnome engine, which supplies his power, is one of the remarkable inventions of the Age of Flight

flying of birds through the air. It is a very efficient method of transit, and exceedingly high speeds are developed by many species of birds with little expenditure of power. The type of aerial machine corresponding to this method of locomotion is known as the *ornithopter*. It implies simply the oscillating action of a bird's wing, and is a sort of aerial machine almost neglected by experimenters at the present time. When, however, one sees the speedy wild duck and the lofty trains of wild geese, the majestic heron, and even the Andean condor circling through the air, it must be said that nature has solved the problem of bird locomotion with vastly higher efficiency than man can ever hope to solve it mechanically.

Now let us cast a thin, flat stone or square of tin into the water, and watch what it does. Perhaps it twists and turns irregularly, but makes more or less straight for the bottom, just as Johnstone and his Wright biplane did at Denver, when one wing of the aeroplane became disabled and the whole structure, including the unhappy pilot, came tumbling swiftly toward the cruel earth. Had it been possible to project the stone or bit of tin edgewise into the water, keeping it edgewise as it traveled, no doubt it would have gone a considerable distance horizontally from one part of the pool to the other, much like a slate or cardboard which a schoolboy often sends whirling through the air. Now the stone or bit of tin in the water, while in itself only an imperfect illustration of an *aeroplane* nevertheless typifies the relation of an aeroplane to the air. If we could attach a small whirling axle and spring-driven propeller to the stone, we should find after experimenting to satisfy certain conditions of stability, that the propeller would drive the stone swiftly through the water nearly horizontally, so long as the spring's power still lasted. When, however, the spring has run down, both it and propeller and axle and stone fall to the bottom of the tank unimpeded except by the friction of the water.

Next imagine the pond or swimming-pool replaced by air, and expanded in every direction till it reaches around the earth, and that its depth, or available height for balloons and aeroplanes to traverse, is equal to about five miles. The foregoing illustrations, then, typify in simple fashion the five different varieties of aerial machines at present in existence. As will be observed, the first two — the free balloon and the dirigible — are lighter than air, while the last three, and in particular the aeroplane, are much heavier than the amount of air which their bulk displaces.

Regarding the measure of danger or safety of transit in the different types of aerial vehicles, I cannot say that those who have had abundant experience agree very well on this question. For my own part, I incline to regard the free balloon, when ascensions are made with a competent pilot and on days when the atmosphere is quiet, as the least dangerous type of all. If, however, a balloon is tied captive to earth, ascent in it becomes rather risky if a sudden or a gusty wind should spring up, because the balloon is likely to be blown directly down to the ground and come in collision with various objects within reach of its tether. On a perfectly quiet day, of course, a captive balloon should be absolutely safe.

In regard to the dirigible, however, the question of safety is quite otherwise. Its very name implies ability to go about from one point to another, quite independent of the elements, and for this purpose motors are provided which necessarily introduce the risk of fire and possible explosion of the envelope. In the dirigible we are opposing the forces of nature, that is, the convection currents of the atmosphere, which are practically always in motion and represent hundreds of thousands of horsepower. Obviously, then, it is quite foolish to think of fighting these natural forces with only a few hundreds of horsepower, artificially developed by the engines of the dirigible. So long as the power is off and the craft can drift with the wind, a dirigible may be quite as safe as a free balloon. If, however, a landing must be effected in the wind, troubles of the gravest sort cannot fail to arise; and anything like a dependable transit service with a dirigible, even between two cities close together, seems to me utterly hopeless and futile. In most parts of the inhabited world where the weather is continually experiencing sudden and unforeseen, indeed unpredictable, changes, the larger we build our dirigible, the greater its total mass and the momentum to be overcome when it must make a landing; so that troubles increase rather than diminish with size. Of course, within the tropics and anti-cyclonic regions of the globe, regular and commerical trips may readily become possible. This type of aerial craft has within recent years been developed to such a state of perfection on the European continent that trips in a dirigible have become quite common; and if the day is fine and fairly certain to remain so, it does not seem to me that the risk of taking a brief trip in one can be very great. The unsurmountable difficulty, however, occurs in any and every attempt to inaugurate a regular service of dirigibles regardless of the weather. The continued wrecks of Zeppelins confirm this view.

Neither the helicopter nor the ornithopter

(*Continued on page 66*)

At present, the cranking of an aeroplane motor is a somewhat primitive operation. This shows Latham, "the wind-fighter," and his wonderful 100-horsepower engine

The tail and steering gear of the Antoinette are made up of movable triangular sails, and the whole somewhat resembles the feathered tip of an arrow

THE NOW ANCIENT SPORT OF BALLOONING

WHAT THREE EXPERIENCED AERONAUTS THINK OF IT AS COMPARED WITH THE NEWER AND MORE HAZARDOUS AVIATION

A. HOLLAND FORBES AND THE FORBES BILL

THE Forbes Bill, recently passed in the State of Connecticut to regulate and license aviators and flying machines, is the cause of considerable discussion. It gives Connecticut the distinction of being the first state in the Union to pass laws pertaining to the building and operation of aircraft, and the result of this bill is being carefully watched by the legislative bodies of other states.

The bill proposes to keep aeronauts and

Mr. Forbes in the car of his balloon, about to ascend

aviators under the control of the state and, incidentally, to protect the lives and property of its citizens from damage which might result from inexperienced aviators attempting to fly in flimsy and badly constructed machines of their own design and manufacture.

Mr. A. Holland Forbes, the author of the bill, is well known throughout the country as an aeronaut and yachtsman. He is president of the Aero Club of Connecticut, a member of the New York Yacht Club, a governor of the Aero Club of America, and formerly its first vice-president.

Although Mr. Forbes has shown great interest in the progress of aeroplaning, ballooning is his favorite sport. He has represented the United States in the Gorden Bennett Cup Race and other international events.

In Germany, in 1908, with Mr. Augustus Post as aide, his balloon burst over Berlin at a height of about three thousand feet, and although the bag acted as a parachute, they landed on a roof with sufficient force to go through into the room below.

Again, in the spring of 1910, Mr. Forbes had a startling experience with Mr. John Carrington Yates as his aide. He was out for the world's altitude record and, without oxygen, they reached a height of 26,200 feet. At the end of the flight, while making ready to land, the appendix line connecting the balloon bag and the car parted. This caused the weightof the car to be thrown on the netting lines. Owing to the tremendous height they had attained a large amount of gas had been expanded. When the appendix line parted, the weight of the car caused the bag to elongate. This in itself did no harm, but the elongation became extreme and took up all the slack in the rip cord (which was attached to the concentrating ring) — and a little more. The jerk on the cord ripped open about five feet at the top of the bag, allowing the gas to escape immediately, and they made a straight drop of about five hundred feet, fortunately in an open space. They were found by some mountaineers, carried to a cabin several miles away and twenty-nine miles from the nearest telegraph office. Here they had to lie for weeks, their back muscles torn and ligaments badly strained.

There must be something wonderfully fascinating about ballooning, for Mr. Forbes's devotion to flying is as strong as ever. He once wrote to me in a letter of the vivid sensations of an air voyage:

"To be alone in a balloon at a height of fifteen or twenty thousand feet is like nothing else in human experience. It is one of the supreme things possible to man. No flying machine can ever better it. It is to pass extraordinarily out of human things. It is to be still and alone to an unprecedented degree. It is solitude without the suggestion of intervention; it is calm without a single irrelevant murmur. It is to pass the sky. No sound reaches one of all the roar and jar of humanity; the air is clear and sweet beyond the thought of defilement.

"No wind blows in a balloon, no breeze rustles, for it moves with the wind and is, itself, a part of the atmosphere.

"Once started it does not rock nor sway; you cannot feel whether it rises or falls.

"Above, the light, translucent, billowing globe of shining brown silk, the blazing sunlight, and the great deep-blue dome of the sky. Below, far below, is a torn floor of sunlit cloud slashed by enormous rents through which the earth and waters are visible." PHILIP W. WILCOX.

HIGH OVER NEW ENGLAND MOUNTAINS

IMAGINE yourself suspended in the air fifty times as high as the Metropolitan tower, in a car made of wickerwork, as cosily equipped as a Pullman.

Almost any day, whether it be summer with the sun at its hottest or the coldest day in winter, you can gaze upward, in the vicinity of North Adams, Mass., where millions of cubic feet of gas are used annually for the man of the upper air, and see those magnificent monsters sailing at various altitudes, and carrying as passengers from one to ten persons.

"Ready with your gas!" cries the pilot. Then, with a hiss and a deep roar, the gas pours through the iron pipes and the rubber tubing, and the empty bag gradually inflates and assumes a spherical shape.

Twenty or more men are seen in a crowd removing the sand bags, and the monster silk globe tugs and groans at its ropes, anxious to break away from Mother Earth. Then the pilot calls "Jump in!" The names of the passengers are taken, and the representative of the gas company asks for the signatures, in order that the company may not be held re-

A photograph of New England scenery taken from a balloon by Mr. Stevens

sponsible; yet the pilot, who has made more ascensions than any other living man, assures you that there is practically no danger in this grand sport.

Now the earth is rapidly sinking away. The statoscope shows that you are ascending, and the barograph registers 350 feet. Up and up you go until the balloon no longer rises, when you register 3,000 feet and you have reached an equilibrium.

Again the balloon ascends. This time it reaches 5,000 feet, and Graylock, the highest mountain in Massachusetts is directly beneath you, looking like a speck, while the villages seem but small, dotted-out lines on a drawing board. Rivers look like little silvery threads, and the lakes and ponds like golden blotches spattered here and there. Far below one sees a train of cars crawling along like a snail.

The clouds have passed away, and you can see in both directions for a distance of forty miles, bringing to your view cities eighty miles apart, so close that you would imagine that you could put out your hand and throw a stone into each.

Looking down, all is green glory. There are the shades of the spruce, the shades of the pine, and the dark and the light shades of deciduous trees in this glorious mass of green. Seven thousand feet below us are the colors of the birch, the ash, and the maple, while over it all, and far from the earth, the magnificent effects of the sun upon the clouds,

(*Continued on page 56*)

The old and the new. Captive balloon, free-sailing balloon, and aeroplane in the air simultaneously at Los Angeles

The first machine, with adjustable lower plane. There was no way of supporting this and in use it would have soon worked loose and dropped off

The third machine had an ash frame with bamboo outriggers, and was unintentionally a racing type of plane. Only high speed would keep it in the air

THE ADVENTURES OF AN AMATEUR AVIATOR

By T. H. PARKER

ABOUT the time the Wright brothers began to attract attention with their aeroplanes, and Curtiss was getting ready to do something startling," said the Amateur Aviator, "I was seized with the same mental disorder that attacked my celebrated predecessor, Darius Green, and in the words of that gentleman I asked, 'If the Wrights can fly, why can't I?' Following his example I determined to find out why I couldn't, but with somewhat better success, for I not only built four flying machines, but flew as well, and lived to tell the tale.

"Early in the summer of 1909 the aviation fever fastened itself upon me in its most malignant form, and there was no relief except in large homeopathic doses of literature on aeronautics whenever the fever was highest. By the first of September of that year I was completely saturated with aviation lore, and knew not only all that the Wrights and others had accomplished but had gotten the idea that I knew a thing or two more.

"As I look back over that period now and realize how little I did know I am ashamed to look a picture of the Wrights in the face, but like everyone else I have found that experience is a great teacher, for all the knowledge I have acquired has been learned from the ground up by actual experiments with home-made aeroplanes.

"I set to work on my first machine with a theory that all the others had one great weakness in that they put too much strain on the upper plane. I was going to demonstrate that my discovery was the greatest of the age, and I drew plans accordingly.

"This is the way I worked it out. Having decided to build a biplane after the Curtiss model, I put the two halves of the lower plane on hinges, fastening them to the front of the frame, the idea being to drop them at any angle the operator might desire. They could be adjusted at any angle by means of levers controlled from the seat, with stops to hold them in place. My theory was that by increasing the angle and presenting more of the surface of the lower planes to the wind, they would get the greater part of the strain and relieve the upper plane of a great part of the lifting. I had evolved a sort of adjustable angle of incident without knowing what I was doing.

"Except for this departure the flyer was like a Curtiss, with forward elevator, stabilizers, and all. The upper plane area was 5 x 30 ft. and the lower plane area 4.6 x 30 ft. I made the framework of spruce, covered it with light canvas, and braced it with piano wire. For an engine I used a four-cylinder motor that I took out of my automobile and installed, flywheel and all. I hitched it up to the propeller with a chain drive. The propeller I made out of an ordinary 6 x 6 beam which I turned into shape.

"I worked on this machine for nearly two months, my wife looking after my business in the meantime. As the weather grew colder I built a shed (I hadn't yet learned to call it a hangar) to work in. My neighbors thought I was going crazy, and every pleasant day when I opened the doors I drew a scoffing audience.

Getting up speed for a flight requires a large, level field

"At last the final adjustment was made and as I surveyed my work it looked so good to me that I asked a friend who worked on a newspaper to have their photographer come out and take a picture with me at the wheel. I felt like a real aviator when he snapped me, and thought I was ready to fly right away. But I didn't get off the ground that day. As I was 'tuning her up,' as they say, I felt that something would go wrong, so I postponed my trial trip until my audience should be absent.

"A few days later a favorable time came and with the help of six men I rolled the machine from the shed to the field where I was to make the try-out. I'll admit I was somewhat discouraged when the weight of the machine made it difficult to move over a sandy place in the road, but I thought that on the harder surface of the field, with the propeller going at high speed, she would skim along like a swallow.

"I started the engine. I didn't have to call on the bystanders to hold her; she stood without hitching. If I hadn't been impatient I would be waiting there yet, for although the engine was going at top speed the propeller wasn't making more than five hundred revolutions a minute, and the breeze wouldn't even blow your hat off. The vibration was so great that I thought the machine would shake itself to pieces.

"But my adjustable lower planes were most encouraging. They fluttered like the wings of a fledgling trying to make its first flight from the nest, and I'm sure the thing would have learned to use them if only I had given it time enough. Although the machine never left the ground my great theory took wings and departed never to return, for I did not have to be an expert to see that they were impractical. There was no way of supporting them and they would have soon worked loose and dropped off.

"As the six men who trundled the machine to the field had considerable to say about its weight, I rolled it upon some hay scales and found that my little butterfly tipped the beam at 1,125 pounds, or twice as much as an aeroplane of that kind ought to weigh. Sadly I put my first attempt back into the shed to dismantle at my leisure; but I had had my first lesson in aeronautics and it had cost me about $400, including the hangar. I was gratified to know that the plan and balance of the machine, at least, were correctly worked out.

"Winter being at hand I set to work on a new aeroplane that was to be ready for a flight in spring. As spruce had proved too heavy, I planned a frame of bamboo, and proceeded to get a corner on the local fishpole market. With the exception of the motor bed the entire frame was bamboo, and when completed the aeroplane weighed 420 pounds. Both planes were 7 x 20 ft., all out of proportion, as I found

out later when I acquired more wisdom on such subjects. The usual proportion is 1 to 6. This aeroplane, also, was made after the Curtiss model, as were all those I built.

"I still clung to my automobile engine for motive power, but this time I had the flywheel taken off, after a great deal of labor. Later when I put it back into the auto it cost me a pretty penny to have that flywheel replaced.

"My innovation in this machine was an aluminum propeller which I designed. This machine looked better than the first one, but when I tried to start the engine it wouldn't go without the flywheel. So that was the end of my experiments with that for motive power. I knew a motorcycle racer who had a machine that could make ninety miles an hour, so I imagined that an engine like that ought to blow an aeroplane into the clouds without half trying. With $200 I acquired this engine and set it up in the aeroplane.

"Everything being ready I started the engine to tune her up and got the propeller moving at a fair speed when suddenly the propeller flew to pieces, one blade coming within an ace of decapitating a bystander.

"Then I bought a beautiful propeller made of Philippine mahogany, for which I paid $65. When this propeller got to making about 850 revolutions a minute it, too, parted company.

"But before this happened the little engine had lifted the front wheels off the ground in a short run across the field, and if it hadn't been for this I would have thrown the whole thing in the scrap heap. I thought I would build a runway of boards on which to get a start, but before I could kill myself with this scheme I read up on aviation motors which decided me to quit experimenting with the others and buy one of these.

"Having installed a 30-horsepower aviation motor and a new propeller I was again ready for a flight. The public had begun to take more interest in my experiments — perhaps thinking that they might be in at a killing — so when it became known that I expected to fly I had a big crowd, with several auto parties near the road on which I was to make the trial. Everything seemed propitious. The engine ran without a skip, the propeller held together, and I believed that I was going to give the citizens an opportunity to see their first aeroplane flight.

"Down the road I went, the wheels just touching the ground, but a sudden gust of wind caught my machine, causing it to rise up on its tail end and slide along in that position straight for a telegraph pole. How I managed to avoid it I don't know — perhaps a friendly gust blew me away from it. Be that as it may, I got by all right, but then there appeared directly in front of me an automobile filled with people. There was no way of escaping them, so still on its tail-end, the aeroplane and automobile collided, the planes settling down over the automobile like a hen brooding her little ones.

"Finding no one was hurt we hauled off the aeroplane, and after a few adjustments I was ready for another trial. This time the same telegraph pole got in the way again and stayed there, and when I separated it from the aeroplane the machine was beyond repair, so I added another trophy to the walls of my hangar and planned another.

"I was puzzled by the way this machine acted when it stood up but did not offer to ascend. As I kept reading up in aeronautics all the time I discovered the reason a few days later. In a scientific description of an aeroplane I read the words 'cambre' and 'angle of incident' that were Greek to me. So I looked up these terms and learned a whole lot that I never even suspected before. I had made the upper planes of both these machines perfectly flat, so that there was no cambre, and the angle of incident was left out of consideration entirely. In other words I had been making big box kites and trying to fly them with a motor. I might have succeeded with a canvas area twice as large and an equilibrator like Wellman's.

"After discovering that I was ignorant of the two essential elements of a successful aeroplane and that it had taken me nearly a year to find it out, I began to lose some of the 'bump' that I had before I started in, so before building my third machine I did a lot more studying.

"This machine I designed to be 5 x 30 ft., with an ash frame and bamboo outriggers. The ribs I bent by soaking them in hot water and then placing them in cleats I made in the overhead beams in my cellar. When they were dried they remained curved as I wanted them. First I installed a 30-horsepower motor, but while trying it out I smashed a cylinder. This motor I replaced with one of 50 horsepower.

The start of the last flight. This machine — the fourth — was built with great care and flew successfully, but disaster claimed it on its second flight

Wrecked by a pile of cornstalks — the end of number three

"By this time my fame had penetrated about twenty-five miles from my home town, and as a result the managers of the Pumpkinville agricultural fair wanted me to exhibit my machine there. They offered me $200 a day for two days and I consented to go.

"I had my machine at the fair grounds bright and early on the first day, you may be sure. Although I had not had a chance to test it I determined to give the people their money's worth and fly if such a thing were possible.

"This resolution came while I was setting up my tent, and when these preliminaries were attended to I went out to look over the field. There was not a level spot in it big enough to turn round in. The lot was full of ridges like hurdles for a steeplechase, and the lower end of the field fronted on a lake fringed with trees. But even then I was fool enough to cling to my resolution to get off the ground if I could.

"While tuning up the engine I carelessly left a monkey wrench on the upper plane and before I knew it the vibrations caused it to slide off. Then things began to happen. First a large splinter from somewhere almost pierced a bystander, a second later a hole appeared in the roof of the tent and almost immediately something heavy fell back through the roof, grazing the head of another man, and struck the ground with a thud. Someone walked over, remarking 'Here's your wrench' while others began to get under cover as if expecting the machine to blow up.

"By that time I had stopped the engine. When I saw the gouge in one of the propeller blades and figured out the flight of the wrench I knew what had happened.

"As the first day's crowd was not large the spectators were easily satisfied and I amused them by showing the thrust of the propeller by hitching the machine to ice scales, such as you see hanging on the rear end of an ice wagon, and letting the machine run as far as it could with the propeller going. Before the wrench knocked the piece out of the propeller the scales showed 200 pounds, but after the nick was made, small though it was, it showed only 180 pounds. From this I learned how important it is to have your propeller in perfect shape. I repaired the propeller by winding some tape over the gouge.

"On the second day all the cotton mills in the town shut down, schools closed and the fair grounds thronged with people. Of course my machine was the centre of attraction.

"There was a stiff breeze blowing, but it died down and I decided to run along the ground as far as the hurdles would permit. I made three short runs. Everything went so smoothly that I forgot the danger from the condition of the field and on the next trip tilted my elevator a little and left the ground. On sober second thought I realized my rashness and came down, but I was over those hummocks and when I landed I smashed some of the running gear but otherwise escaped damage.

"That evening as I was packing up before starting for home one of the managers came

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CONDUCTED BY RYLAND P. MADISON

BREAK-DOWNS ON THE ROAD

WHEN a car that has been running satisfactorily all day suddenly slackens speed and stops, the movement of the engine dying away without any audible manifestation of breakage in its interior economy, the odds are very great that the fault can be rectified in a few moments when once it has been found; but unless a systematic method of seeking the lesion be adopted half an hour may be spent in diagnosis and half a minute in treatment. Unfortunately the tendency of the human mind is always, until initiated, to suspect and search for the most unlikely and complex causes of failure when the real cause is simple and obvious if it be only looked for in a rational manner.

I have known the owner of a steam car, in such an instance, to go most carefully over the whole engine and mechanism and then, failing to find anything wrong, to telephone to the nearest agency, some twenty miles away, for mechanics to be sent out immediately. When they arrived he had the satisfaction of paying them $10 or $15 for the information that his water-tank was empty, a contingency that had never occurred to him though he had taken off his crank-case and all but pulled his engine to pieces in searching for the inexplicable reason of its stopping.

In a gasoline-propelled car the most frequent causes of failure are to be found in the ignition circuit; this, therefore, should be the first object of overhauling. If magneto-fired the most frequent seat of failure will be found to be the lead wire from the magneto which has become insulated at the binding screw because of oil, which is a non-conductor, penetrating the contact. In this case the indications are a complete failure to ignite in all the cylinders: the cure is obvious.

If the ignition be irregular and insufficient to drive the car, but capable of keeping the engine running more or less jerkily when free from load, the spark should be advanced to the utmost length of the quadrant; should this procure satisfactory ignition, the fault is with the adjustment of the coil vibrator which may be easily remedied, though it may require to be dressed down with emery-cloth before complete recovery is obtained. If the failure be confined to one or two cylinders, the fault is obviously not in the generator but in the conducting medium, which, with a jump-spark ignition, usually means a short circuit in the spark-plug. In a make and break ignition, on the other hand, a short circuit will stop ignition in the whole engine, and a broken spring may be suspected which allows the hammer to lie continuously in contact, cutting off all current from the other cylinders. A loose or defective wire will of course affect all the parts which it supplies with current; if, therefore, the vibrator buzzes when the car is cranked, but no ignition occurs, the whole wiring between the coil and the cylinders must be investigated. With four-cylinder cars failure in one cylinder will not stop, though it will slow down the car; the regular miss-fire is audible and followed by explosions in the muffler; to determine which cylinder is at fault is an easy matter if the engine be cranked slowly or run free.

With total failure to ignite in battery-ignition, the lead wires, contacts and the cells themselves should be tested, as the fault may be short circuit, broken circuit, or polarized cells.

In double-ignition cars, failure to generate current is easily proved or eliminated by switching on the cells and magneto alternately; if both fail to ignite a break-down in the conducting apparatus is almost certain.

Next in frequency to ignition troubles comes imperfect combustion, the most usual causes of which are defective gas-mixture and defective compression. The causes of the former are water in the carburetor or flooding due to dirt in the needle valve, clogging of a feed-pipe, or sticking of an air-valve. Draining off the contents of the carburetor will eliminate the first two; failure of it to fill again will reveal the third, while the last can be demonstrated only by investigating the valve — it is of course assumed that the gasolene tank has been ascertained to be full.

Defective compression is not likely to arise suddenly in more than one cylinder; it may, therefore, be disregarded when the failure includes all four. When it does occur it is easily located if the engine be run free or cranked with the relief-cocks in the cylinder heads open two at a time; the difference in the emanation from the cocks of the imperfect combustion and the perfect are sufficiently palpable to both hand, ear, and eye. Defective compression may be caused by a leak round a spark-plug or relief cock, or by the intervention of a foreign body between an inlet-valve and its seat; in the first

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The average owner of a new car is very likely to pull it to pieces in search of complex troubles when the real fault is simple

Don't forget to carry a good supply of tools and a few extra spark-plugs and valve-springs for use in case of trouble with the motor

POWER YACHTING

CONDUCTED BY BRADFORD BURNHAM

TO THE SOUTH BY THE INSIDE ROUTE

OF COURSE we fully intended to make a very early start, and of course we didn't do anything of the kind. For when leaving port outward bound on a month's cruise the list of "last things" that simply must be taken along is apparently unending. The fact that in a motor boat, even a little one, space economy is nowhere near as vital and necessary as with the canoe or pack burro doesn't help diminish the size of the pile. There are many comfort-bringing things, which can be carried on the motor boat cruise just as well as not; but let them be too numerous, and the comforts speedily become burdens.

Well, it was therefore high sun before we slipped modestly out of that queen of harbors, New London, and turned our stem westward to begin our long cruise to Hampton Roads and Norfolk. We were only twenty-two feet long and cabinless at that, save for the usual theoretically water-proof khaki spray hood, and our power was but four and one-half horsepower. Yet we were confident and eager to snow the incredulous old salts of an earlier generation, who find the water useful chiefly as a subject for sage discourses, and the receptacle for the juice of the narcotic, hurled from the end of the wharf, how perfectly possible it is to take a long cruise, much of it in the open, in a small, open motor boat. Given a staunch, sea-worthy collection of boards beneath your feet and an engine reconciled to performing its important function without urging, and there is no need of staying in your own back yard with a hollow yearning for a big and costly cruiser. An explanation of how easily and comfortably an open boat may be fitted for a cruise will be given space here at some future date; for, like everything else it all lies in knowing how.

This month we'll hustle over our two days' run through the Sound, because that ideal cruising ground deserves and shall get, an article devoted to it exclusively, and start with a foggy morning in July when we made our way tremblingly down the North River amid ferries, floats, and tugs. Off the Battery with more water we felt braver and prouder, too, as we followed the course of the liners down the Upper Bay till after passing Robbins Reef Light we turn sharp to the right into Kill von Kull to the North of Staten Island. Running down, or if the tide is against us, literally shoving our way through, Arthur Kill, behind Staten Island, we emerge presently, or ultimately as the case may be, for the tide is mighty strong here, at Perth Amboy. The mouth of that wonderful river, the serpent-shaped Raritan is near at hand, and we have a fifteen mile run up this during which one must be careful and not run into his own ensign. This is the start of the inside route to the South, and even if you are big enough to go down outside you may want to vary the scene by taking the inside course one way. For there is an abundance of attractions to the motor boat enthusiast in Chesapeake Bay, the Delaware River, and the placid and peaceful canals.

The dotted line shows the inside route to Florida from New York as far as North Carolina

The first of these we enter at New Brunswick, N. J., which we reach by the aforementioned circuitous Raritan. This is the old Delaware and Raritan canal, 44 miles long, 7 feet deep, with 13 locks, which are 210 feet long, and 23 feet 4 inches in width. There is a peculiar charm to this canal, after you have recovered from the payment of a $6.50 toll for your boat, and one wants to linger along the way which leads across some of the most beautiful parts of New Jersey, past Bound Brook, Millstone, Kingston, and Trenton, with Princeton's towers in view. Almost anywhere along its bank may be found good places to run off on a siding, so to speak, and tie up for the night. Plan to spend at least one night on your cruise along the canal, not at the noisy and more populous

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The serenity of the canal is its chief charm and produces a mental state of peace with the world. Be sure to protect your boat temporarily with several fenders

The marine elevator never loses its novelty. A three-cent cigar will reconcile the lock-keeper for having his nap interrupted and will expedite matters in general

CONDUCTED BY PHIL M. RILEY

PHOTOGRAPHY STEP BY STEP

XIII.— Reduction

[This is the thirteenth of a series of articles on photography for beginners.— The Editors.]

REDUCTION consists in lessening the printing density of a negative in order to shorten the printing time, or to secure more harmonious gradation of values by cutting down the density of the high-lights and so rectifying harsh contrasts and bringing out detail hidden in excessive opacity. As the necessity for reduction is always the result of over exposure or over development, the process consists merely in removing a portion of the metallic silver of the image. Several chemicals are in use for this purpose, but the action of all is substantially the same. Potassium ferricyanide and sodium hyposulphite are the most common. In a solution containing these salts, silver is converted into a double salt, silver ferrocyanide, which becomes soluble in the hypo and so may be washed from the gelatine film of the negative.

Three sorts of negatives will be benefited by reduction. They are: correct exposures over developed; under exposures over developed; and over exposures fully developed.

"A Young Vacationist." By W. W. Crawford

A correct exposure which has been over developed has plenty of detail even in the shadows and the contrasts are great, depending in strength upon the degree of over development, but, above all, it is dense and the printing time is long. If the contrasts are not much too great and lessening of the printing time is the chief object, a reducer which will act in a general way upon all portions of the image with approximate uniformity is desirable, such as ferricyanide and hypo. This is also true of over exposures which have been fully developed in spite of great density in order to secure as much contrast as possible. Negatives of this sort usually have fogged or veiled shadows although the high-lights are rarely too strong, and so a reducer is required which will act upon all portions of the image alike — in other words, attack the shadows without materially affecting the relative intensity of the high-lights.

"Storm Approaching." By Richard Pertuch

For treatment of these two classes of negatives prepare 10 per cent. stock solutions of ferricyanide and hypo in separate bottles, and store the former in a dark place as it is affected by light. Take enough of the hypo solution to cover the negative when laid in a tray and than add the ferricyanide. The exact quantity of this is not important, the result of a weak solution being identical with that of the shorter action of a stronger solution. For slight action, ten minims of the ferricyanide may be added to each ounce of hypo solution; or for considerable action, four or five times that. Now immerse the negative and rock the tray to secure uniform action, examining the negative occasionally to judge the progress of the work. When reduced sufficiently, wash the negative thoroughly and dry as usual. Do not try to keep the used solution.

If over development of a correct exposure has been considerable, or if an under exposure has been greatly over developed in an attempt to bring out shadow detail, a reducer is needed which will act in proportion to the densities of the image, attacking the high-lights considerably and the shadows hardly at all. With ammonium persulphate and sodium sulphite the high-lights may lose half their strength while the shadows are almost unaffected.

Prepare fresh when wanted a solution of persulphate containing fifteen grains to each ounce of water. Immerse the negative in this, rock the tray for uniformity of action, and, when sufficiently reduced, rinse quickly and remove for two minutes only to a 10 per cent. solution of sodium sulphite, after which the negative may be washed and dried in the usual manner. An ordinary fixing bath containing nothing but hypo may be used in place of the sulphite solution if more convenient.

Frequently only a small portion of a negative requires reduction; it may be just one extreme high-light, as an opening to the sky through the trees. In such a case local reduction is the remedy, but it requires skill, care and practice. First soak the negative in water for a few minutes and then prepare a weak ferricyanide reducer. Moisten a tuft of absorbent cotton in the reducer and go over the spot with a sweeping stroke and immediately wash the negative in water. Continue to apply the reducer and to wash it off as long as necessary. The action will, of course, be slow, but this method prevents any hard lines indicating the reduced area. When the reduction is sufficient, wash and dry as usual.

All that was stated in the previous chapter relative to the cleanliness and chemical condition of the negative previous to intensification also applies to reduction, and is of the utmost importance to the success of the work.

ANSWERS TO QUERIES

Readers wishing information upon any point in connection with their photographic work are invited to make use of this department. If a personal reply is desired, a self-addressed stamped envelope must be sent. Criticisms will be made on submitted prints, which should bear the maker's name and

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GARDENING UNDER GLASS

GREENHOUSES
COLDFRAMES
HOTBEDS
HOUSE PLANTS

CONDUCTED BY HENRY MAXWELL

A BUSY MAN'S WINTER GARDEN

SO MUCH interest has been shown in the "Perfect Half Acre Garden" of Mr. R. B. Whyte, at Ottawa (described in COUNTRY LIFE IN AMERICA for April 1, 1911), that I am encouraged to give an account of Mr. Whyte's attractive little conservatory which is here pictured. There are thousands of people who cannot afford to keep a gardener, nor spend much time or money on a greenhouse, who would be delighted to learn what comfort and inspiration can be had from a simple structure attached to and heated from the house.

Mr. Whyte lives in a climate where flowers are plentiful outdoors only from May to September. The winters are long, cold, and steady, and every home seems brighter that has a warm, sunny corner where flowers bloom in cheery contrast to the omnipresent snow. On the other hand, a man who gardens in summer as keenly as Mr. Whyte does not care to overdo gardening in winter. An hour a day is all that Mr. Whyte cares to devote to winter gardening except on Sunday mornings. In this little greenhouse he grows 300 pots of bulbs, 40 kinds of cacti, 20 begonias, 20 varieties of geranium, etc.

Mr. Whyte's attractive little conservatory, heated from the house, in which he grows at a minimum of expense 300 pots of bulbs, 40 kinds of cacti, 20 begonias, 20 geraniums, etc.

Some years ago Mr. Whyte wrote me: "My little conservatory continues to be a never failing source of interest and pleasure. I am beginning to find out what I can grow successfully, and govern myself accordingly. The variation of temperature is too great for many things; orchids are out of the question, and roses and carnations have been discarded, as I have only one compartment. Some of the more delicate ferns will not stand the low temperatures of our cold nights. The mercury has never gone to freezing yet but has been pretty near it several times. However, we can grow geraniums, begonias, primulas, abutilons, azaleas, palms, most of the ferns, and, of course, all the bulbs, of which we grow a lot. Last fall I put in the cellar 250 pots of hyacinths, narcissi, tulips, freesias, Easter lilies, etc. Not the least interesting feature is a collection of thirty-eight seedling geraniums just coming into bloom. Some of them have flowered, all of them very good, and some extra fine. It is great fun growing plants from seed when they don't come true, for there is always the chance of getting something good to keep up the interest till flowering time. I have been pretty successful in that work besides growing lots of plants for the garden last spring."

Last August I had the pleasure of visiting Mr. Whyte's greenhouse and can testify that it is attractive even in summer. I asked him to give me his best heart-to-heart advice for beginners and he replied in this fashion:

"If I had it to do over again, I should have two compartments so that I could grow roses in one and carnations in the other. I cannot grow carnations, as it is not convenient to maintain a temperature as low as 45 to 55 degrees Fahrenheit. We would rather use the greenhouse as a living-room. Moreover, I should have an independent heater. It is more economical to heat from the dwelling house, but the other way is better. Often you want heat in the house and not in the greenhouse, or *vice versa*.

"On the whole, geraniums have given the most satisfaction. I wish I could grow the show pelargoniums, but I cannot. Cacti are rather disappointing; when you water a cactus every week for a year, and get only one flower that lasts one day, it hardly seems to pay. Epiphyllums and phyllocacti are the most satisfactory of the family, as they bloom freely and are very showy."

Another look at the picture will show what a pleasant spot this is in which to spend an hour reading or sewing, even when there is little in flower. And when those 300 pots of bulbs are in bloom it must be a very bright and cheery place indeed. Why not inquire the cost of such a structure now? It is cheaper than an automobile and need not cost more than a good player-piano. And, strange as it may seem, midsummer is the best time to make arrangements for building a winter garden.

SUMMER HINTS

VERANDA and window boxes have been greatly improved of recent years. The self-watering, or sub-irrigated, box is a decided advance, and so are the various indestructible boxes of concrete and terra cotta, as opposed to the wooden kinds.

After the spring rush is over, coldframes often lie idle and suffer depreciation. The best use to which they can be put in early summer is to start perennial and alpine flowers from seed. In this way one may raise thousands of plants for the hardy border and rock garden at a great saving. By the autumn the seedlings should be large enough to put in permanent quarters where they will survive the winter and bloom next year.

A FLOWER THAT DOES BETTER OUTDOORS THAN IN

NEARLY everybody knows a pink-flowered house plant (*Impatiens Sultani*), which might be called the Sultan's jewel, since it belongs to the same genus as the jewel weed and balsam. This plant is beloved because it will bloom nearly the whole year, with a minimum of trouble. The original color is rose red, but it can now be had in several shades of pink and also in white. The species is a native of Zanzibar. The plant is rather succulent, but not unpleasantly so, like its relatives. For though the jewel weed is a lovely flower, the plant itself has a dropsical look, and even the garden balsam is rather bloated compared with the Sultan's jewel.

Last August Mr. R. B. Whyte called my attention to an interesting fact about the Sultan's jewel. Although it is a tender plant, it seems to bloom better outdoors than in. There were quite a number of potted plants in the greenhouse which we were able to compare with others growing out-of-doors only a few feet away. In the greenhouse the plants are likely to get lank, and they do not respond to artificial heat. Outdoors they are compact and bloom freely.

Does anybody know a pink-flowered house plant that will give more for the money?

Country Life Abroad

CONDUCTED BY MADISON R. PHILLIPS

[The aim of this department is to give a few suggestions which it is hoped will prove of value to the American who travels abroad. Further information as to where and how to get will be supplied as promptly as possible by the Country Life in America *Readers' Service.*—The Editors.]

THE HOME OF GERMAN FLOWER SEEDS

THE transatlantic traveler who lands at either Hamburg or Bremen to take the overland route through Germany for the South will use the Imperial German Railway via Hanover, Nordhausen to Frankfurt, Bavaria, and Tirol. After passing Nordhausen he will travel over a plateau which, on account of its great fertility, has for centuries been famed as the "Goldene Aue" or the Golden Plains. In the very heart of this district, among the beautiful forests of Thuringia, lies Erfurt — the "Blumenstadt" or city of flowers, as it is termed throughout the empire.

It matters little from which side you approach Erfurt — it is surrounded on all sides by flowers. Acres of asters, pansies, sweet peas, godetias, petunias — all the lovely children of the floral kingdom are grown here, for the seeds which are sold throughout the world. The origin of the Erfurt flower seed industry dates back to the seventeenth century, when Archduke Johann Friedrich von Mainz presented to the University of Erfurt a piece of ground to be converted into a botanical garden. A few years of its existence convinced several wide-awake citizens of the possibilities which climate, soil, and location offered for the production of seeds. As a result, the year 1760 saw the birth of the first seed establishment of Germany in Erfurt, a firm which to this day is still managed by members of the founder's family.

The great specialty of that time was ten-week stock (*Cheiranthus Matthiola*). By 1764 a dozen distinct sorts of it had been raised. Slowly but surely the seed industry grew. In 1822 Christoph Lorenz succeeded in evolving the first yellow variety of Cheiranthus. The venerable sons of this grand old man gave the writer his first unforgotten lessons in floriculture. By 1842 Erfurt boasted eight large establishments, all devoted to the production of seeds and plants. To-day it is the home of twenty mammoth seed houses and about thirty smaller ones, all of which grow seeds, especially flower seeds. An approximate area of 2,000 acres is under cultivation, 750 acres being under glass. Nearly 5 per cent. of Erfurt's population is connected in some way or other with the seed industry.

The quantities of flower seeds produced in Erfurt are a revelation to the layman, but a few specific instances will suffice to set the reader's imagination going. As far back as 1863, 866 pounds of ten-week stock seeds valued at 180,000 marks were produced in Erfurt. To-day the value of this product sent out of Erfurt exceeds 500,000 marks. One of the leading firms grew fifteen acres of asters in 1865, besides many acres of balsams, stocks, and other annuals. Since then the acreage has been greatly increased; thousands of varieties of seeds are grown and the actual seed output of Erfurt can only be surmised. To raise 300,000 pots of ten-week stock for seed production is now a yearly occurrence with most of the important seed houses of Erfurt.

Everything good in flower seeds has come from Erfurt for decades past. Nearly all the floral novelties of merit offered by our American seed houses (with the exception of sweet peas) can be traced back to Erfurt. To give the real heroes of flower evolution credit for their deeds is not within the scope of this brief narrative. They are "the men behind" who work with hearts and hands and who get little of the rewards which the world reserves for its commercial geniuses. I knew the man who took *Gaillardia picta*, var. *grandiflora* and evolved from it *Gaillardia picta*, var. *Lorenziana*. For forty years this man produced new forms of plant life. So indifferent was he to monetary compensation that at the end of his career his heirs had to meet the funeral expenses. His work was his reward, and his floral productions live to tell future generations of his efforts.

There are more flower seeds grown in and around Erfurt than in any other city in the world. Nearly 9,000 varieties of flowers are offered by its leading seed houses, and all are grown right there. Over 300 sorts of asters, 100 sorts of pansies, 100 sorts of stocks, phloxes, petunias, etc., etc., help to make the showing which greets the visitor on his walks or drives through the fields adjoining the city. To take care of these thousands of acres and varieties requires a small army of men and women, boys and girls. During vacation time all the children of the poorer classes find opportunities to earn money in the flower fields. While the pay is small (12 cents per day for a child) the influence of this kind of work is better than loitering around the city streets; and Erfurt is favorably known as a city remarkable for the absence of crime.

In Germany a man is not a full-fledged gardener until he can claim to have worked for a few years in one of Erfurt's leading seed establishments. As the result, thousands of young men flock to Erfurt every year. Erfurt is the mecca of the seedsmen of Europe, as well as other continents. All turn to it for inspiration — and they find it. Many of our prominent American seedsmen visit it every year to get news and novelties.

Seventy-five per cent. of all the flower seeds produced in Erfurt are exported. About 20 per cent. of these come to America, where

Lath houses with petunias. Acres of ground around Erfurt are covered with them. By applying glass sashes they are easily converted into covered houses

A typical greenhouse interior at Erfurt where the best of the world's flower seeds are raised. These are cinerarias of various colors in full bloom

floriculture is still in its infancy. To have a few rods of ground or a few square feet of window sills and not have flowers is impossible in that city. The City Government does a great deal to encourage the liberal use of flowers around the homes. Contests are held every year for the prettiest front and back yard gardens, and the flower-box-laden apartment-house fronts are surely a curious sight for the American visitor.

Nature not only favored Erfurt with ideal soil and climate, but gave it a gift the value of which cannot be estimated in terms of money. The warm springs which are found in the "Dreienbrunnen," the southwest suburb of Erfurt, have proven a remedy for many ailments of the human body. Many of these springs are utilized in raising watercress, of which carloads are shipped throughout the year to all parts of Europe. Another great specialty encouraged by these warm springs is dwarf giant cauliflower, which is likewise shipped by the ton, while the seeds saved are sold at from $10 to $25 per pound. Nowhere have I seen finer heads of cauliflower than in Erfurt, where magnificent specimens may be bought at from five to fifteen cents each, according to the supply.

Many places of historic interest make Erfurt attractive for the student of early European civilization. It boasts hundreds of the finest and best-preserved houses from the fourteenth and fifteenth centuries. Its magnificent cathedral is second only to the one in Cologne. The St. Augustine Monastery, where Luther spent years as a monk, previous to the reformation, and the old fortifications on St. Petersberg are worth anybody's time to see. The usual amount of soldiery found in German cities of this size lends color and character to Erfurt's streets and functions. But everything is dominated by the spirit of the flowers, which make Erfurt gay during eight months of the year, and which spread fragrance, joy, and beauty to all who come in contact with them.

ADOLPH KRUHM.

A typical Swiss summer scene showing a steep slope of growing grain and vegetables in striking contrast against a background of towering snow-clad mountain peaks

JULY NOTES FROM ABROAD

THAT district all along the southern border of France in the foothills of the Pyrenees is rapidly developing as a golfing centre, particularly for spring and early summer playing, although the high altitude of many places makes them quite as enjoyable in midsummer. Pau has for some time been known as a Mecca for the golfer and likewise St. Jean de Luz near the sea. The new eighteen-hole course there is pleasantly situated on the Nivelle. Beside the Bidassoa, at Hendaye, the little French town from which the train crosses into Spain, a new course is being laid out, while up in the hills above Pau, at Argeles, is one of the most delightful greens of France.

Strangely enough, golf has not become popular in Spain, but with the young King's desire to encourage tourists in Spain and the employment of many Spanish boys as caddies on the Franch greens of the Pyrenees so nearby, it is bound to be so before long. The Basques have always been a great game-loving people, and when they once take a hand at the Scottish game they are sure to make their mark. Thus far, however, they have clung to their national "pelota," which ranks as one of the greatest of ball games in the world.

ENGLAND is the paradise of the economical tourist. Everywhere excellent and inexpensive food and shelter may be obtained. Throughout the rural districts there are bake-shops with their cyclist cards, and picturesque little inns, many of them thatched. The one shown in our heading is in the Moorlands at Chittern-St. Mary's-in-the-Downs, a place not half so large as its name.

ARTISTS and photographers alike who visit Switzerland in summer will be charmed by the striking contrast of vast slopes of growing grain and vegetables, grazing cattle, and brilliant wild flowers against a background of towering snow-clad mountain peaks. It is almost a fairyland, and it seems much like a paradox.

FONTAINEBLEAU, famous the world over for its beauty and historic associations, is a favorite spring and summer excursion from Paris. Leaving the Lyon Station, it is distant about an hour and a half by rail. Hotel accommodations are excellent.

Golfers will find this an especially interesting trip because of the new enlarged course there in the famous forest just outside the town. A portion of it was opened in 1909, but since then great improvements have been made. Although the entire course is now ready for play, the official opening does not occur until September 18th, when James Braid, J. H. Taylor, Harry Vardon, and Jack White will play.

The course is almost ideal, the soil being sandy and well sheltered from severe winds, and the greens excellent. The ground is undulating and offers variety enough to make careful playing necessary to secure a good score. Lunch may be obtained at the club house overlooking the course.

AFTER five and one half years' work and an outlay of $20,000,000, the final obstruction to the Loetschberg tunnel through the Bernese Alps was pierced in March. It is the third longest tunnel in Europe, being about nine miles in length. The St. Gothard tunnel is one fourth mile longer and the Simplon three and one half miles longer.

The Loetschberg tunnel is designed to give the Simplon Tunnel Railway line a direct connection with the railways which traverse Switzerland from north to south. It means a direct through route from Milan to Berne and thence to Calais and Boulogne. The distance from Milan to Calais will be reduced eighty miles by this route.

GREAT interest is being manifested in the £10,000 aeroplane circuit flight around England and Scotland which is to be conducted by the *Daily Mail*. The course is divided into five sections, starting from Brooklands and including Hendon, Edinburgh, Bristol, Brighton, and the finish at Brooklands. In all, the course approximates one thousand miles in length. The contest commences July 22d and will finish at the latest on August 5th.

THE Aero Club of Bearn is offering a 20,000-franc trophy to the first aviator who flies between Paris and Pau in a maximum time of three days. Competitors must start from Issy, and must notify the club before starting at which of the three Pau aerodromes it is their intention to alight.

It matters little from which side you approach Erfurt; it is surrounded on all sides by flowers. The sticks indicate pansies selected for breeding purposes

A lath house display of ten-week stocks, one of Erfurt's greatest specialties. As early as 1764 a dozen distinct sorts of it had been grown

THE ADVENTURES OF AN AMATEUR AVIATOR

(*Continued from page 40*)

up and during the conversation informed me that they had first tried to get Willard or Hilliard to make flights there, offering them $1,500, but they refused to risk their lives after they looked over the field. And there I had been patting myself on the back because I was paid $400 to risk breaking my neck!

"However, I was so well satisfied with the way I had gotten off the ground at the fair that I repaired the damage quickly when I got home and prepared to make some of my sneering neighbors sit up and take notice. I was confident that I was going to do some real flying after all my broken promises, and the news got into the papers.

"This time I secured a good starting place and to the surprise of the large crowd, I left the ground on the first attempt. Flying low I made the trip down the field for about a quarter of a mile with great success, but did not attempt to turn. After several of these flights I decided I would try to turn and come back. Pride certainly goeth before a fall, for in making the turn — my first one, by the way — I somehow or other lowered my elevator as I swung round, caught one wing tip on a pile of cornstalks, and came down in a heap with one wing smashed beyond repair. This was the end of machine No. 3.

"I learned, subsequently, that perhaps this was a lucky fall because if I had not smashed the machine then I would have attempted other flights with it until, perhaps, I killed myself. It was a case of 'know nothing, fear nothing' so I flew with it; but what I had built this time was a racing type of plane that would not have traveled any distance at a speed less than forty miles an hour, and had I succeeded in getting very far in the air I would have been dashed to pieces on the ground if my motor ever stopped. I had made the angle of incident so slight that the planes had very little lifting power, and only high speed would keep the machine in the air. I was surely learning some valuable lessons without realizing what risks I was taking.

"As soon as I had added this wreck to the mural decorations of my hangar I planned my fourth aeroplane. I had learned by this time to leaving nothing to chance and built this machine with greatest care. The ribs were all made of laminated wood, the main braces and struts were all one piece, and the canvas was laced in sections, there being five in the upper and lower planes. The planes were 5 x 30 ft. A 50-horsepower motor was installed and the entire weight of the machine was 650 pounds. If I do say it, this machine was as good as you could find anywhere and I was proud of it. I tried it out and it came up to all my expectations.

"On the first day of my public exhibition with this flyer I contented myself with straight-away flights. They were so successful that the newspapers published a column about my work. This caused a big crowd to assemble next day to see me do something. Unfortunately the wind was blowing a small-sized gale, and I should have known better than to attempt anything. But I was always very sensitive about remarks reflecting on my sporting blood, so in spite of my better judgment I started out. Getting into position so that the wind was at my back I gave the word and was off. Going with the wind was easy sailing but as I attempted to turn I got rattled when I saw the wind was sweeping me along sidewise. I could see that unless I could get back to near my starting place I would be blown into an orchard. I was up about ninety feet when I realized my predicament and thought that if I planed down a bit the additional momentum would carry me around in spite of the wind.

"Just then a tree, which I measured afterward and found was about sixty feet high, appeared directly in front of me, and before I could swerve around it a twig on one of the top branches pierced the upper plane and the machine dove head-first to the ground.

"When I came to I was lying with the engine hanging about a foot over my head and the upper part of my body, and right there I offered a little prayer of thanksgiving that from the

very first experiment I had seen to it that the engine seat was made of the strongest material and the engine fastened to it as securely as possible. If the engine seat had not held as I intended I would have been crushed to death by the 250-pound motor, as has been the case in several accidents to aviators since flying became possible.

"When the crowd rushed over to gather up my remains I was crawling from beneath the wreckage.

"That was the closest call I ever had, but I am still in the game, which by the way has cost me about $3,000. Next season, in spite of what my wife says, I shall have another new machine and a whole lot of valuable experience."

THE AUTOMOBILE

(*Continued from page 41*)

two cases a wrench, and in the last a syringeful of gasolene will remove the trouble. Other causes of defective compression are a weak or broken valve-spring, a pitted valve, piston-rings clogged or worked round so that the breaks in them are in line, or a broken valve-stem.

When a valve or its spring are at fault a new one may be substituted on the road if the driver be confident of his ability to time it correctly when inserted; piston trouble will be best left alone till a garage can be reached, driving on three cylinders being infinitely preferable to exposing the interior of the engine to the dust of the road.

If an engine run stiffly or be hard to crank, a defect in the oil supply is indicated; this may result from an empty oil-tank, a clogged tube, or failure of the oil-pump which is generally duc to clogging.

The remedy is to force gasolene through the oiling system by means of a powerful syringe, then to pour oil into the crank-case, start the engine and let it right itself; all the oil, however, should be removed at the next stopping-place, and kerosene substituted for it; after a vigorous cranking this should be drained off and the oil-tank refilled.

In case of break-down on the road both time and labor will be saved if the following routine method of investigation be followed, each step being taken in case of negative results from the previous one; where positive results are obtained, the remedy has already been indicated.

A. When the whole engine fails to work:

(1) Advance the spark; (with dual ignition try both systems).

(2) Examine contacts at magneto (or cells) and wiring thence to cylinders.

(3) Test spark at cells.

(4) Test compression by cranking with relief-cocks open.

(5) Drain carburetor and watch it refill.

(6) Examine air-valve for sticking.

(7) Sit down patiently and wait for a tow.

B. In case of failure in one cylinder only:

(1) Examine spark plug or contact hammer, replacing former with a new one.

(2) Examine wiring to idle cylinder, including distributor if present.

(3) Test compression by running engine free with relief-cock open.

N. NEWNHAM-DAVIS.

THE AMATEUR PHOTOGRAPHER

(*Continued from page 43*)

address and full particulars of date, light, plate or film, stop, exposure, developer, and printing process. Each month one or two of these prints will be reproduced, and those that are used will be paid for. Address all letters to Editorial Department, COUNTRY LIFE IN AMERICA, *Garden City, New York.*

P. C. V. — Every amateur has negatives in which the high-lights are too dense and the shadows too thin. Better prints can often be made in such cases if extra care is taken. Procure a piece of clear glass the size of the negative, cut a piece of ordinary white tissue paper the same size, and fasten it to the glass with paste around the edges. Now mark one corner of the printing-frame as the corner for registration, so that if always tilted toward this corner two plates in the frame will always locate themselves in the same relative positions. Put the glass into the frame tissue side down, and above this negative film side upward. Now hold the frame up to the light, being careful not to drop out the glasses. An artist's stump, some powdered charcoal, and vaseline are needed. Thin portions which need holding back can be shaded with the charcoal, and dense portions can be painted with vaseline applied with a brush. Stumping with charcoal retards printing by building up an artificial density, while the vaseline makes the tissue transparent and lets more light through. Test prints should be taken as the work proceeds, as it is easy to overdo it, causing a smoky appearance where too much charcoal has been applied. Rough paper is best when much work is to be done. For broken horizons, where steeples or foliage intervene, careful work must be done with a fine spotting brush, and allowance made for spreading of the vaseline, which will be about one-eighth of an inch.

PRINT CRITICISM

W. W. CRAWFORD.— Originality is one of the most desirable qualities in pictorial photography to-day. This applies to subject, but more especially to composition. "A Young Vacationist" is a case in point. It is very unusual in conception and in every way charming.

RICHARD PERTUCH.— "Storm Approaching" is a beautiful bit of impressionism. The fishermen with their boat are in just the right spot, the horizon is well located and the cloud effect thoroughly appropriate.

CHARLES TURNER SANDS.— Both of your prints are very good. "The Gila River" might have been more pleasing had the high-lights been less white. This is perhaps due to re-development which has a tendency to bleach the high-lights. The exposure was none too much, however, and full timing always tends to give a more harmonious result. "Range Branding" is certainly realistic and well composed. More exposure here would have helped, but of course, the subject has its limitations in that respect.

B. B. BUCK.— "On the Charles River" has much to recommend it in subject and tone values, but one wonders what the paddle is doing in the foreground so far from the canoe itself. Certainly it causes a white spot whch holds the attention and distracts it from the real point of interest. A crack across a negative as in this case may often be avoided by printing slowly in subdued light by suspending the printing-frame by a string from one corner and keeping it constantly revolving.

POWER YACHTING

(*Continued from page 42*)

basins at the terminals, but somewhere along the way. The strange fascination of a night spent *in a boat* in the midst of a rich farming land, the stillness broken by the country noises, cannot fail to weave its spell. But be sure you tie up on the side opposite from the tow-path or the spell may be broken somewhat roughly.

Seven miles beyond Trenton, where an item worthy of notice is the fact that the canal crosses *over* the railroad, we come to Bordentown, the western end of the canal. Here we enter the Delaware River. After getting away from the canal, hug the left bank closely or you will make connection with that specific part of the river bottom known as Kinkora Bar.

It's a mighty good stunt to have had a previous confab with the tide table before running down the Delaware; as that element is exceedingly strong. The motor-boat cruiser who has tried it, instinctively turns Raymond Hitchcock's immortal lines into "Ain't it funny what a difference just a little tide makes?" It may make all the difference between whether the twenty-four miles down to Philadelphia will be accompanied with blessings or imprecations. The latter would be a pity since this is a mighty pretty stretch for the always in good humor cruiser.

After pausing at Philadelphia, if we like, to investigate such things as mints, cracked bells, locomotive works, square meals and moving pictures, we continue down stream to Delaware "City," where we enter the second and shorter canal, the Delaware and Chesapeake. This is a run of about thirty-three miles and contains no first class places for spending

Poultry Directory

In this department are printed the advertisements of reliable poultry breeders and dealers in poultry supplies. The Poultry Department of COUNTRY LIFE IN AMERICA will be glad to send to its readers any information about poultry which they may desire. Address POULTRY DEPARTMENT, COUNTRY LIFE IN AMERICA, 11-13 W. 32d St., New York.

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ONE ENTHUSIASTIC OWNER WRITES:

Sharon, Conn., Feb. 13, 1910. — Our H. T. Parrot is learning to read. I give him a bit of paper and he will say "A. B. C." He sings "Yankee Doodle," "Little Brown Jug," speaks all our names, says "How do you do, this morning," whistles for the dog and calls him "Benny," etc. —MRS. SARAH A. ROSS.

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a night. Just above Chester you pass Essington with its well-known yard where repairs to the vitals can be made if necessary. Whatever attractions Wilmington, up the Christiana River, may offer are a hundred times offset by the swarms of skeets that inhabit the region. Anchorage out in the Delaware means the endurance of the wash of frequent steamers. So it is better to lock into the canal before throwing over the hook or attaching the painter. This canal is much shorter than the Raritan, having a length of twelve miles and a depth of nine feet. But it will cost you $4 to pass through it, or rather crawl through if you are wise, for the speed limit of four miles per is rather strictly enforced. Altogether this canal is not so pleasant as the other.

The immense metropolis of Chesapeake "City" is at the western terminus of the canal. Here is a telegraph office, where you can wire for more money, a dozen or so houses, and a store or two. Here you are let down gently into the waters of Back Creek which empties shortly into Elk River, which in turn runs into Chesapeake Bay, from behind Turkey Point. Along these shores may be found many inviting spots to spend a night or two, either camping on shore, or lying snugly in some little cove. Crossing the yellow mouth of the Susquehanna, and following down the western shore, we run by Poole's Island to be left on the starboard hand, and not long after come to the mouth of the Patapsco River with Baltimore nine miles up this wide stream.

The chief city of Maryland will welcome you hospitably and will offer you gasolene at the lowest figure to be found anywhere along the course. A side trip by rail to Washington is tremendously worth while unless you plan to visit the national capital later by running up the Potomac.

The run of some 170 miles down the Chesapeake is one of continual enjoyment in fair weather. It will be found pleasanter to follow the west side. The east side is cut up by a countless and confusing number of islands and indentations, necessitating either a much longer course, or a number of long outside runs which the 20-footer is inclined to fight shy of. You can easily run from Baltimore to Solomon's, in the mouth of the Patuxent, in a day, or you can run up the Severn for a visit to Annapolis if you choose. Solomon's is an interesting and convenient anchorage, though frequently overcrowded. It is the home of the Chesapeake oyster bug-eye, with its quaint outlines and preposterously raked masts. From Baltimore to Annapolis is about thirty miles by motor boat; from Annapolis to Solomon's, about fifty-two miles. After a morning spent in Annapolis, the run to Solomon's can be made in the afternoon, and as you round Cove Point at sunset and make in for Solomon's the scene is one of beauty and interest. For Solomon's is a lively little port, and you will be greeted with the sound of phonographs, the sight of the oystermen, and the all-prevading smell of gasolene and fish.

We had heard fear-inspiring tales of the wild and unladylike behavior of the Chesapeake, especially of its lower part. We had been led to believe that this boisterous conduct was quite the usual thing. And the most dreaded of all, the Scylla and Charybdis of the whole trip, was the mouth of the Potomac. So we were quite unprepared to find that supposedly turbulent spot as calm and peaceful as the tranquil canal we had left behind. That is, going down. It was another tune coming back. And hot! Maybe! We therefore, weren't even perturbed in spirit to have our firing shaft break exactly when we were squarely in the middle, miles from shore, and we had to patch her up and push her on. We went sixty-six miles that day, dropping anchor in the mouth of the Piankatank River this time. There are two harbors for small boats here; a quiet little bay to the north, and Milford Haven to the south of the river entrance. The latter is preferable, and a cosy little anchorage is found in back of Gwynn's Island, full of Revolutionary lore. A big saving is made on leaving this harbor by coming out to the south of the island over a bar which has about four feet over it at low water.

Continuing southward the course follows near shore till New Point Comfort is passed, then a straight course for Back River Point, a few miles above Old Point Comfort, carries you for quite a long stretch some distance from land across the entrance to Mobjack Bay and York River. York Spit Light will be left a few hundred yards to port.

Suddenly rounding Old Point, perhaps after pausing for a swim in water surprisingly warm, as compared with that of Long Island Sound and the Delaware, the beautiful scene of Hampton Roads greets you. Fortress Monroe and the big Hotel Chamberlin at Old Point are on your immediate right, and as you cross the Roads, Hampton, Newport News, and the mouth of the James River will be opened out. Leaving Sewall's Point on the left a run of fifteen miles up the Elizabeth River brings us to Norfolk, Virginia's chief seaport.

A fine number of side trips may be made from Norfolk, or the southward journey may be continued by canal to the inland waters of North Carolina. A visit by trolley to Cape Henry with its giant lighthouse and primary sea-coast light is repaying.

For the cruise to Norfolk by the inside route the following charts are needed: Nos. 369 (New York Bay and Harbor): 375, Raritan River; 126, Delaware River (showing from Trenton to Penns Neck); and 131-136, inclusive, of Chesapeake Bay. These may be had for fifty cents each (except the one of New York Harbor which is seventy-five) from the United States Coast and Geodetic Survey, Washington, D. C., or from a number of local agencies. United States Coast Pilots, Part IV. and Part V. (fifty cents each) will also be found very valuable even for the small boat. By observing directions therein, harbor charts are unnecessary and a good knowledge of the locality may be obtained.

THE NOW ANCIENT SPORT OF BALLOONING

(*Continued from page 38*)

with its marvelous lights and shadows, are visible from this high altitude.

And as you glide along with such lazy ease that you hardly realize that you are moving, scenes of marvelous, ever-changing beauty unfold themselves beneath your wondering gaze.

An ideal flight was one in which I was accompanied by Professor Todd, of Amherst College, Percy Sherman, President of the Williams College Aero Club, and W. A. Sommerville, of New York, in which we won the trophy known as the President's Cup.

The *Cleveland*, one of the largest balloons in this country, left North Adams at 6.45 on Friday evening, with a north wind blowing. We first crossed North Mountain, which is 2,000 feet high, and then I found my course veering to the northeast, which became more apparent as the wind freshened. Then began a grand aerial steeplechase with mountains as hurdles. The good *Cleveland* bobbed like a cork, but a few ounces of ballast thrown overboard gave us equilibrium. Shortly after this we again ascended, this time to an elevation of 6,500 feet, clearing Haystack Mountain, in the Green Mountain Range, which rises 3,642 feet high.

Owing to the mountain air currents, I wanted a good clearance, and as we passed high over Bald Mountain, which hunches its shoulders 2,212 feet into the ether, I christened it with sand ballast. Again we ascended, and shortly afterward drifted over the Connecticut River Valley. For awhile we were lost over White River Junction, being blown out of our course by the contrary air currents. It was now getting thick and darkening up fast, and we swung around in the vortex, constantly catching sight of the same town beneath us. It seemed as if it were tied to my trail rope.

Dropping to an altitude of 2,000 feet, I shouted for location, but could not comprehend what the inhabitants replied. We had lost our bearings and wanted to be sure that we were not drifting out to sea. After a little jockeying, I struck a good slant which again bore us north.

There never appears to be any perpendicular motion in a balloon, and it is only when you look over the side of the car and see the 300-foot trail rope whipping out behind the car like a great inert snake, that you realize the direction in which you are moving.

At 9.45 we passed East Manchester at an altitude of 6,300 feet, and a little later crossed

Concord, N. H., at an elevation of 7,000 feet. The sight of crossing this town illuminated at night was one never to be forgotten.

Swinging around in a more northeasterly course we crossed Lebanon, at an elevation of 7,100 feet, and here again thick weather troubled us, but with the aid of Professor Todd's powerful glasses, we recognized the towers of a college in that vicinity. An impression which appealed overwhelmingly to the imaginative sense, was the spectacle of Readsboro Falls. It was dark and the space beneath us was misty, but the moon was rising and we could catch a gleam of water through the semi-transparent veil and could hear as a weird murmer, piercing the misty atmosphere, the roar of the torrent.

At 11.45 we crossed Lake Fairlie, Vt., and at midnight we passed over Bradford, which was 9,000 feet below us. I threw out a little sand,

Leo Stevens in Charles J. Glidden's balloon *Boston*, preparing to make an ascent at Springfield, Mass.

and at 12.15 the next morning we crossed Wells River at an altitude of 9,800 feet. At one o'clock, while passing Peacham, a driving snowstorm struck us. I attempted to rise above it by throwing out ballast, but the higher we got the more disagreeable it became, so that the soft clinging snow of the lower level was preferable.

We looked over our maps, and started to descend. We found that we were now crossing Sherbrooke. By this time the snow had turned into rain, and after crossing Drummondsville in the Province of Quebec, we found that we were over wild country, and decided to come down. At an elevation of 1,000 feet the wind was blowing in an opposite direction, tending to force us back over the course we had come. We landed safely at St. Hyacinth, and were informed that we were about thirty miles from Montreal.

It was in every way an ideal flight, and one of many that one would get with a favorable wind in the direction of Canada. The distance covered was 386 miles, and we were in the air 11 hours and 53 minutes. A. LEO STEVENS.

BALLOONING AS A PASTIME

THROUGHOUT the world to-day more minds are working on the problem of aerial navigation than were ever employed in developing any previous invention. Millions of people in every civilized country are watching the results, ready to accept the air-ship as a practical means of transportation. While the aeroplane naturally receives first attention, the old-fashioned spherical gas balloon is still of considerable popular interest, as well as its more modern successor, the dirigible of the Zeppelin and Baldwin types. This was convincingly shown during the long-distance balloon races from St. Louis last summer, which for a few days seemed about to end fatally. The possibility of such an occurrence, however, was due entirely to the desire to exceed all distance records. When one is satisfied with shorter trips, and, in general, practices ballooning purely for the pleasure in it, there are few pastimes which can equal it. Moreover, if ascensions are always made in good weather there is no more danger than in automobiling, nor is a balloon a much more expensive luxury than a motor-car.

A practical balloon, good for about sixty ascensions, and having a capacity of 25,000 cubic feet of gas, costs $800. If the gas tests 400/1000 it is 60 per cent. lighter than air and will lift 45 pounds per 1,000 cubic feet, or, 1,600 pounds for the whole balloon. To leave the ground in this air-craft costs $31.50 plus the cost of returning it to the point of starting and other incidentals, usually making the total cost of an ascension about $40. A barometer to tell your elevation and a statoscope to ascertain whether you are rising or falling, costs $75, but will last indefinitely. If a balloon is to be hired of some club, the charge for rental only is usually $25. In several Massachusetts cities, including Pittsfield, North Adams, and Lowell, and in Rutland, Vt., ascensions can be arranged by telephone and everything made ready for the flight in a few hours' time.

Two persons can remain in the air in a balloon of this type from two to three hours during the day and all night; or three persons from one to two hours. The 1,600 pounds of weight is, therefore, distributed about as follows: balloon, basket and equipment, 700 pounds; anchor, 25 pounds; two passengers, 350 pounds; and sand for ballast, 525 pounds.

The manipulation of the balloon is simple, but the right move must be made at the right time, otherwise the situation becomes complicated; but in any event a landing is almost certain without injury, even should the balloon burst high in air. If given proper vent, an explosion is impossible, but should one occur, the balloon forms a parachute and safely lands its passengers.

Before starting, the balloon is balanced by adding sand to or taking it from the basket until the balloon will rise in the air, when released, at a speed that will clear all surrounding obstructions in the event of the wind blowing. It will then ascend from 1,000 to 2,000 feet, and, if nothing is done, immediately descend to the earth and the voyage is at an end.

The descent is caused by loss of gas owing to expansion, the gas flowing out through the appendix at the bottom of the balloon. If the flow be obstructed, the balloon will explode. To stop this descent, caused by the loss of gas, it is necessary to lighten the load, and sand, in quantities varying from a few ounces to a pound, is thrown out gradually according to the changes of temperature, the cool air driving the balloon down and the warm air causing it to rise.

Approaching a forest or small body of water, the balloon begins to descend, and to rise immediately the open country is reached. The wind will cause it to rise up over a mountain, and fall after the crest of the peak is passed. Over a city, the cool air rising from the shaded lanes and streets has a tendency to draw the balloon downward, so sensitive is it to the changes.

If it is desired to stop the ascent, the valve at the top of the balloon can be opened, and if too much gas is released a rapid descent will follow, which must be made gradual and checked by throwing out sand. If not immediately checked, the balloon will go down very fast and require the loss of a large amount of ballast.

When a fast descent is stopped by loss of sand in large quantities, a rapid rise follows, even to a higher elevation than that just left. Then another drop and rise until one would find himself rising and falling in sweeps of a half mile. While this would hardly be noticed by the passengers, the ballast would soon be exhausted and a landing made necessary. The art of balancing and using ballast is therefore very important.

In landing, the greatest skill of the pilot is required. To remove all elements of danger, at least fifty pounds of sand should be on hand for immediate use. Seeing a clearing probably four or five miles away, allow the balloon gradually to settle to a lower level, and when close to the selected spot, open the valve a little and hasten the descent. When the trail ropes begin to drag, the descent and forward

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THIS BUREAU IS AN ENLARGEMENT OF THE WHERE TO GO DEPARTMENT THAT HAS BEEN RUNNING IN THIS MAGAZINE FOR YEARS, AND COMMUNICATIONS MAY BE ADDRESSED TO THE READERS' SERVICE IF DESIRED

movement will be checked. Often the trail ropes will stop the balloon 100 feet in the air, over the desired place. If not, when fifty feet from the ground throw out the anchor, open the valve, and the ground will be gently touched. Twenty feet before touching, if the wind is blowing, say twenty miles an hour, pull the rip cord, which tears off a piece of the balloon seven inches wide and nineteen feet long. This allows the gas to escape immediately, and the voyage ends.

Suitable weather should be selected for ballooning, as for pleasure yachting. One would not think of putting to sea in a squall and sailing among the rocks. The weather map should be studied, and ascensions made with the low pressures at least three hundred miles away, and from a point not nearer than twenty-five miles from the sea or any large body of water like the Great Lakes.

The sun playing hide and seek behind the clouds causes the balloon to rise and fall rapidly, and keeps the pilot busy throwing out sand.


The Baldwin type of dirigible which has been superseded by the gigantic Zeppelin

On account of the absence of the sun, the balloon is easily managed at night, with the loss of very little sand. This is true also on a cloudy day.

A plunge in the dark, however, is not desirable unless the moon is shining brightly; even then the night is long and dreary. The best time for an ascension for amateurs is as many hours before sunset as the balloon is likely to remain in the air; this depends upon the quality of gas, the size of the balloon, and the amount of sand you can carry. There is sufficient time after a sunset landing to pack the balloon for shipment before it is dark.

There is nothing more inspiring than to ascend into the ocean of silence and watch the earth change into a map; to sail above and below the cloud-vaulted canopy of the sky, nature's rain and snow laboratory; and no two ascensions are alike. It is not difficult to attain an altitude of two miles in a balloon of 35,000 cubic feet capacity, but it is much pleasanter to sail along at an altitude of about 2,000 feet, within speaking distance of the people below, and where a clearer view of many interesting objects may be had. It is lonely above the clouds, and one is soon glad to return to a height where the earth is visible. The mountainous country of western Massachusetts and of Vermont and New Hampshire offers to aerial travelers weird and beautiful scenery unexcelled elsewhere. CHARLES J. GLIDDEN.

HOW TO BUILD A GLIDER

(Continued from page 35)

to go into details about the construction of this combination rudder as the diagrams give the measurements and will make everything clear. All work must be put together with bolts the same as the main planes. Nails would split the wood and pull apart. The use of bolts also enables you to take your glider apart and pack it into a small space. The vertical rudder shown in Fig. 4 is stationary, its object being to keep the machine headed into the wind so that it will not swing into a cross current of air and tip over sideways. The horizontal rudder is also stationary and is used to help balance the glider and to keep it from diving while in the air. The horizontal rudder is made like the main planes except that it is smaller, the ribs being fastened in the same manner and curved a trifle, letting them extend over the rear edge a couple of inches. Figs. 5, 6, and 7, show how the tail is wired and braced.

FLYING AS A SPORT FOR AMATEURS

(Continued from page 20)

Strange as it may seem, it is not such a great task to learn to fly. Many people can acquire the instinct of keeping an aeroplane balanced when it is in flight. Perhaps more strange still will it seem to the layman when I assert that it is easy to climb up to great heights and float around at 5,000 and 6,000 feet for unusually long periods. So long as your machine holds together you are comparatively safe at the higher altitudes. The atmosphere may be moving with great speed, but it is steady in direction.

But watch some of these high flyers when they come near the earth. Notice how they whirl around and around like a bird attempting to find a landing place. That is precisely what they are doing. All the ground below looks unmercifully perilous to them. It seems ready to rise up and smite them the moment they come too near. For this reason you will often notice some flyers come to earth with a catastrophe. They are what one veteran calls "ground shy."

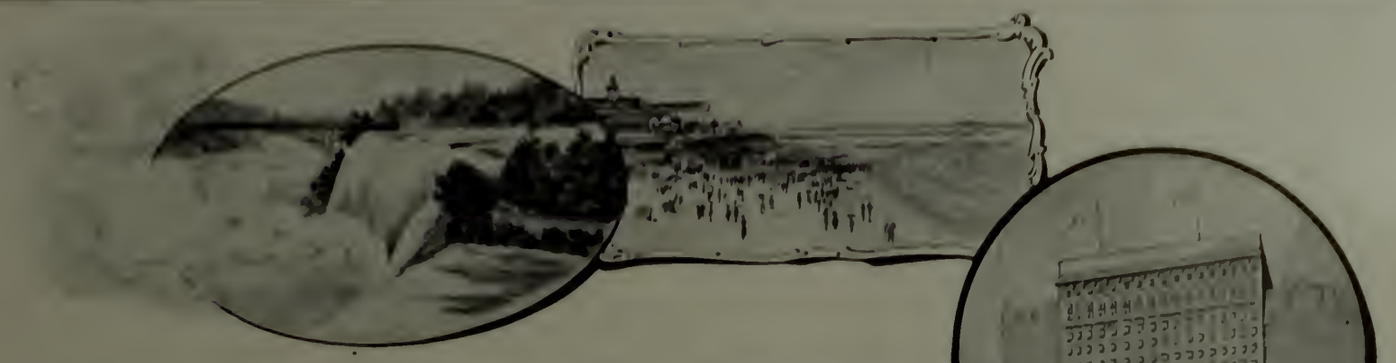
On the other hand, take Curtiss, or Baldwin, or Wright. They play upon an aeroplane as an artist plays upon a piano. They make it obey the slightest touch. When any of these masters leaves the ground it seems like an illusion. They slide into the air so gradually, with such grace that you can scarcely perceive the motion. You doubt your senses until you suddenly awaken to the fact that they are ten or twenty feet off the ground. A flyer who handles his machine with such skill is scarcely ever bothered with gusts. He rides over them and through them as if his machine were part of them. You never get the sense of struggle that is apparent when a novice rides the air on a particularly turbulent day. And note how these men land. They choose their spot and come to


Aviation cups and trophies won by Mr. Harmon

it with a grace and skill that always arouses me to the greatest enthusiasm. In the skill displayed at the beginning and the finish of a flight you can judge the efficiency of an aviator.

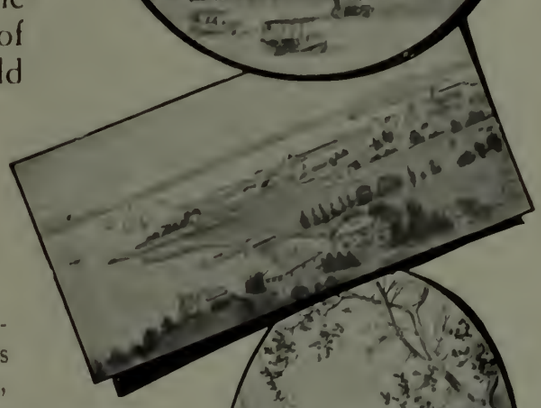
One of the things which I have long advocated, and which Mr. Curtiss has so splendidly developed, is the combination of the aeroplane and hydroplane. This production of Curtiss's genius will do more to make aviation a genuinely popular sport than anything that has thus far been done in the game. If you fall upon the solid masses of the earth, you have slight opportunity to live to tell the tale. If you are pitched into the water, it would be extraordinary if you could not swim to safety. Hydro-aeroplanes or aero-hydroplanes are all alike. I have one at Greenwich, Conn., which I am going to use more frequently than my 70-horsepower Farman machine. It is an aeroplane with a hydroplane attachment. Everybody is familiar with aeroplane forms. The wings lift the plane into space. A hydroplane is so constructed that it presents a surface to the air under a rapidly moving marine craft. This surface does for the boat what the planes do for the flying machine. The boat is lifted sufficiently clear of the water to permit it to travel at the very maximum of its speed capacity.

The hydro-aeroplane is equipped with flat-bottomed floats which gradually rise clear of the water as the speed increases. When the floats are entirely free of the water the air has packed under the wings of the aeroplane sufficiently to cause it to soar. The landing on the



The Vacation Problem

Where to spend the two weeks' vacation that falls to the lot of the average business man is always somewhat of a problem when the time arrives. Many a man would almost rather stay in his office than be bothered looking over the "literature" of the various railroad companies and still not find what he wants.



Exactly what a man does want when he decides to go away depends entirely on his inclinations and temperament and of course his purse. If he is a sportsman, he will want to know where and when he can find good fishing or shooting of the particular kind he needs without infringing on game laws or property rights; if he is fond of sailing or canoeing, he will want to know where these particular pastimes can best be indulged in. Does he want quiet or companionship, rest or exercise, the air of the mountains or that of the sea? All these things, together with the most important one — the price — can be had for the asking from the Raymond & Whitcomb Country Life, Hotel and Resort Bureau.

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water is effected with as much ease as it is on land.

I earnestly recommend the hydro-aeroplane to all persons who seek sport in the air. It enables one to fly with all the abandon of the aeroplane, and yet one need never fear the result if anything happens to precipitate the craft suddenly. Any man who can swim has more chance for safety with the hydro-aeroplane. It will save much worry and anxiety on the part of his relatives if he adopts this form of aerial diversion.

An amphibious affair that is rather flying fish than bird. One of the inventions exhibited at the New York Motor-boat Show

I am so thoroughly convinced that this will be the popular aerial sporting vehicle of the coming season that I venture to say it will be used in every region where there is a lake, river, or bay. It makes the flying a safe diversion for every man who loves a sport with decent hazards.

THE SCIENCE OF AERONAUTICS TO-DAY

(*Continued from page 37*)

has been sufficiently developed as yet to carry even a pilot, let alone passengers, so that we need not consider transit by either of these types.

With the aeroplane, or its two distinguishing varieties, the monoplane and biplane, bad weather conditions add very greatly to the risk and necessary dangers of the ascent. Many years ago Professor Langley conducted a critical investigation into the question which he terms the "internal work of the wind," that is to say, the work done by eddies and billowing strata of the air in their motion upon each other. This question was handled by Langley in his usual thorough and scientific fashion, and the airmen of to-day have only to study the general principles which he propounded in order to understand the basic elements of all their troubles in gliding swiftly through the air, as well as to acquire that appreciation and respect for this capriciously variable and far from homogeneous medium upon which their exceedingly frail, though very powerful, craft are launched and supported.

Langley's researches prove beyond the shadow of a doubt the "cheesy" nature of the atmosphere; and he shows why there are holes, at least apparently, in it, not to say descending currents at times, to drift into which may mean a sudden drop of the aeroplane to such extent as to endanger both machine and operator. With the rapid growth of aerial navigation, it will perhaps become part of the regular work of our Federal weather bureau to forewarn the aviator of special conditions known to lead to this state of the atmosphere. Doubtless in working out the details of the theory much new investigation must be conducted.

Many are the requisites for the future progress of aerial navigation. First, we want motors more powerful than any at present existing, and then motors more powerful than those, and finally motors even still more powerful than these last. The type of steam engine developed by Sir Hiram Maxim and Professor Langley approached a limit of weight equal to ten pounds for each horsepower developed; the aerial gasolene motor of to-day will weigh a little over three pounds for each horsepower, and the ideal limit toward which we may hope to approximate in the near future is perhaps a minimum of one pound for each horsepower.

Next perhaps is needed a multitude of aviation schools where pupils who have had previous and particularly successful experience in racing automobiles and motor-cycles may be afforded the opportunity to try a hand, first, at gliding in machines without motors; and if successful in that, then they may pass to the power-driven aeroplane.

Also, the meteorologists and weather bureaus of the world must help in the study of the new problems of the air which especially concern progress in the art of moving swiftly through it. For my own part, I cannot see how we can better study the air than by going up in it, as in a free balloon, or by sending up hundreds of *ballons sondes* simultaneously from different parts of the country. As yet, the merest beginnings of these highly interesting investigations have been undertaken, and the results have been of greatest importance.

Then, too, we need further practical experimentation on the form and size of blades of the aerial propeller, as well as the placing of them upon the axis, the number found most efficient, the size of blades, particularly their length, and more especially the exact form of curvature given to their surface in order to insure highest efficiency. If some form of aeroplane so develops that the propeller shafts can revolve higher up from the ground, a longer-bladed propeller revolving at slower speed will, no doubt, be found to give greater efficiency.

With such efficiency, too, higher speeds will be possible, and the truth of Langley's law will be more and more illustrated with greater economy at higher speeds than at lower ones. To use Langley's own words, "One horsepower will transport a larger weight at 20 miles an hour than at 10; a still larger at 40 miles than at 20, and so on with increasing economy of power with each higher speed, up to some remote limit not yet attained in experiment, but probably represented by higher speeds than have as yet been reached in any other mode of transport." Obviously this means a speed of at least 150 miles per hour.

With such increase of speed, preparations for meeting the greater resistance of the air must not be neglected. And it will no doubt be found that all present types of aeroplane, built as they are of such flimsy materials as canvas and wood and wire, must give way to the all-steel aeroplane of the future as Moisant firmly believed, and as Baldwin has recently shown us by practical example. Already Blériot and Farman and Paulhan are designing with especial reference to safer flights in winds of moderate velocity. What is especially needed is a type of machine which shall be, first of all, thoroughly reliable, very strong, and particularly speedy. Further improvements on the motors of Voisin and Gnôme, Curtiss and Wright, Anzani and Antoinette are especially desired, and their achievement will enable the development of a new type of machine. The scanty-powered aeroplane of to-day is but the undeveloped tadpole of aviation; who shall say what the full-powered, highly efficient flying-mechanism of the morrow may be?

A WORD FROM THE EDITORS

IN THE heat of midsummer mankind seeks water. Articles on canoeing and power yachting, and some wonderful photographs of the sea, will supply this need to the midsummer number of COUNTRY LIFE IN AMERICA. Several of the famous surf photographs of F. J. Mortimer, the English photographer, will be reproduced in this number in an attractive form, including the front cover and a large double-page reproduction inside.

Among the illustrated features of the number will be: "How George Ade Conquered the Horizon," by Carl Bernhardt; "A Garden That Has Personality," by Wilhelm Miller; "Intensive Observation," by John Burroughs; "Gigantic Lilies Ten Feet High," by Henry Maxwell; "The Masterpieces of the Sea," by Phil M. Riley; "Cutting Loose from the City," by A. L. Sampson; "Safe Canoeing for Children," by W. E. Partridge; "The Decorative Possibilities of Birch and Cedar Bark," by Benjamin G. Fernald; "A Charming but Inexpensive Summer Cottage," by William E. Beers; "A Modernized Germantown Colonial Home," by Mildred Stapley; "Power Yachting," by Bradford Burnham.

August 15th—The Good Health Number. Dr. Harvey W. Wiley, consulting editor.

Plow *VS.* Pills

WHICH IS IT TO BE?

The life of the great outdoors, with its rolling hills and broad horizons that offer bright and cheerful surroundings, alert minds, and healthy lives, or the cramped and noisy existence of the cities, breathing their poisonous atmosphere so that we go about our duties in a constant turmoil of nervous tension? You will enjoy reading Dr. W. H. Wiley's article, "Plow and Pitchforks vs. Pills and Powders" in the

Good Health Number of

Country Life in America

Every article has been written with a view of making it a more authoritative summary of this question than has ever been published before. It is edited by Dr. W. H. Wiley, Chief Chemist of the U. S. Department of Agriculture, and points out the way to those who wish to know "the life worth living" more intimately.

OUT AUGUST 15th

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THE ENGINE USED BY KINGS - THE LEADING FEATURE OF THE WORLD'S BEST CARS

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In the Stearns-Knight, action is not dependent upon ordinary valves such as used in all other 4-cycle American cars, with cam shafts, springs, stems, timing gears and the attendant complications, trouble, noise and loss of power. Instead, in each cylinder are two thin cylindrical shells of iron — called "sleeves"—one inside the other, sliding smoothly up and down in a film of oil. These sleeves have ports in the sides and as they pass each other produce positive valve openings impossible to secure in any other way.

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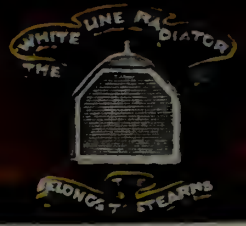

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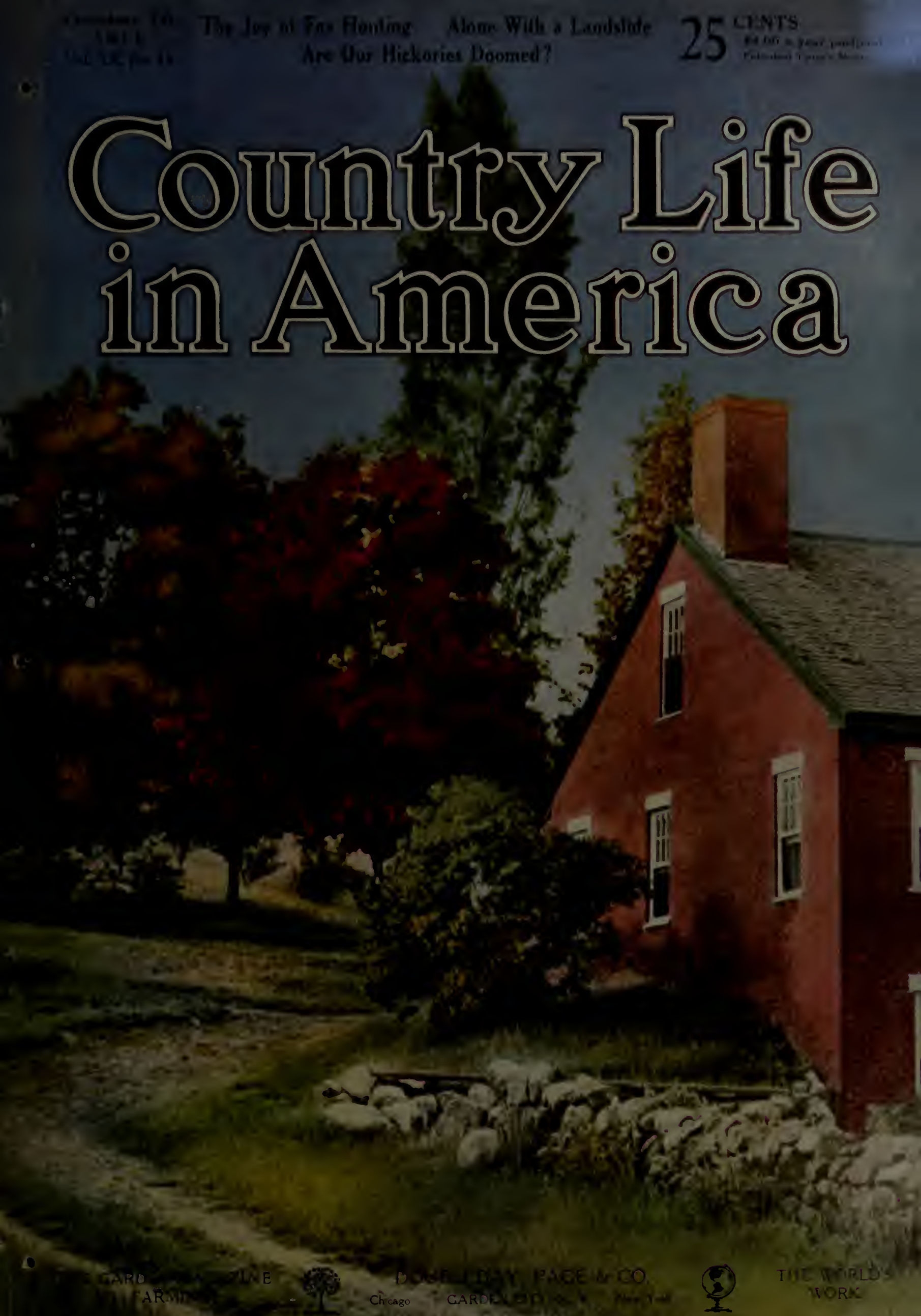

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READERS' SERVICE DEPARTMENT

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MANAGER REAL ESTATE DEPARTMENT

Note: "The Life Worth Living at Garden City Estates" page in Country Life in America, October 1st, was devoted to the recent annual prize award for the best development and treatment of Country Homes of Garden City Estates. For full particulars in regard to this award you are referred to the October 1st issue of COUNTRY LIFE IN AMERICA or to TIMOTHY L. WOODRUFF; address Garden City Estates, Nassau Boulevard Station, or 334 Fifth Avenue, New York.

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The above is an exact reprint of the advertisement published in the March 1st issue of COUNTRY LIFE IN AMERICA and referred to in the letter printed below.

Brandy, Va., July 17, 1911.

Country Life in America,
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For your information would state that I advertised my Virginia estate of 500 acres for sale in your March issue with the result that on June 1st, I sold same.

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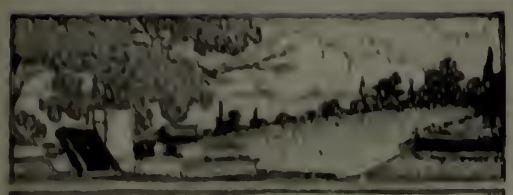

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Arts Crafts Lamps. By John D. Adams. Popular Mechanics Company, Chicago. Illustrated. 80 pages, [illegible].

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Methods of Attracting Birds. By Gilbert H. Trafton. Houghton Mifflin Co., New York. Illustrated. 171 pages; price $1.25 net.

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Hunting Camps in Wood and Wilderness. By H. Hackett Prichard. Sturgis and Walton Co., New York. Illustrated. 274 pages, price $1 net.

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Dustman's Book of Plans. By U. M. Dustman. The Charles C. Thompson Co., Chicago. Illustrated. 239 pages, price $2.

Aside from showing floor plans and elevations of a large number of small houses, typical of the Middle West, this book contains enough practical information of value to builders and those planning their own homes to be classed among builders' guides. It explains most of the terms and problems of building and also states the customary dimensions and methods of building construction.

Garages and Motor-Boat Houses. Compiled by Wm. Phillips Comstock. The William T. Comstock Co., New York. Illustrated; 110 pages, price $2 net.

This is a book comprising designs of garages and motor-boat houses, both frame and fireproof, contributed by various architects of the United States, together with general words of caution and advice. A study of the numerous plans and photographs given should help to crystallize the ideas of the prospective builders. It is to be regretted that the author allowed to appear several over-ornate designs.

"Open Air Crusaders." Edited by Sherman C. Kingsley, General Superintendent of the United Charities of Chicago. United Charities of Chicago, Chicago. Illustrated; 107 pages.

This attractive little volume is a report of the Elizabeth McCormick Open Air School, as well as a general account of open air chool work in Chicago, with a practical chapter on school ventilation. Though the generosity of the trustees of the Elizabeth McCormick Memorial Fund the book is published free of charge, and copies may be obtained by writing the United Charities of Chicago.

The Photographic Annual. Edited by E. J. Wall, F. R. P. S. Tennant and Ward, New York. 287 pages; paper, 50 cents; cloth $1.

This well-known annual contains a vast collection of practical formulæ and information upon almost every process of photography. Although some of these facts are not frequently required, many are very difficult to find at just the right moment, and so this volume is invaluable for reference. This year there is included a complete historical and technical review of screen-plate color photography up to the present time and a chapter on the progress in time, tank and thermo methods of development.

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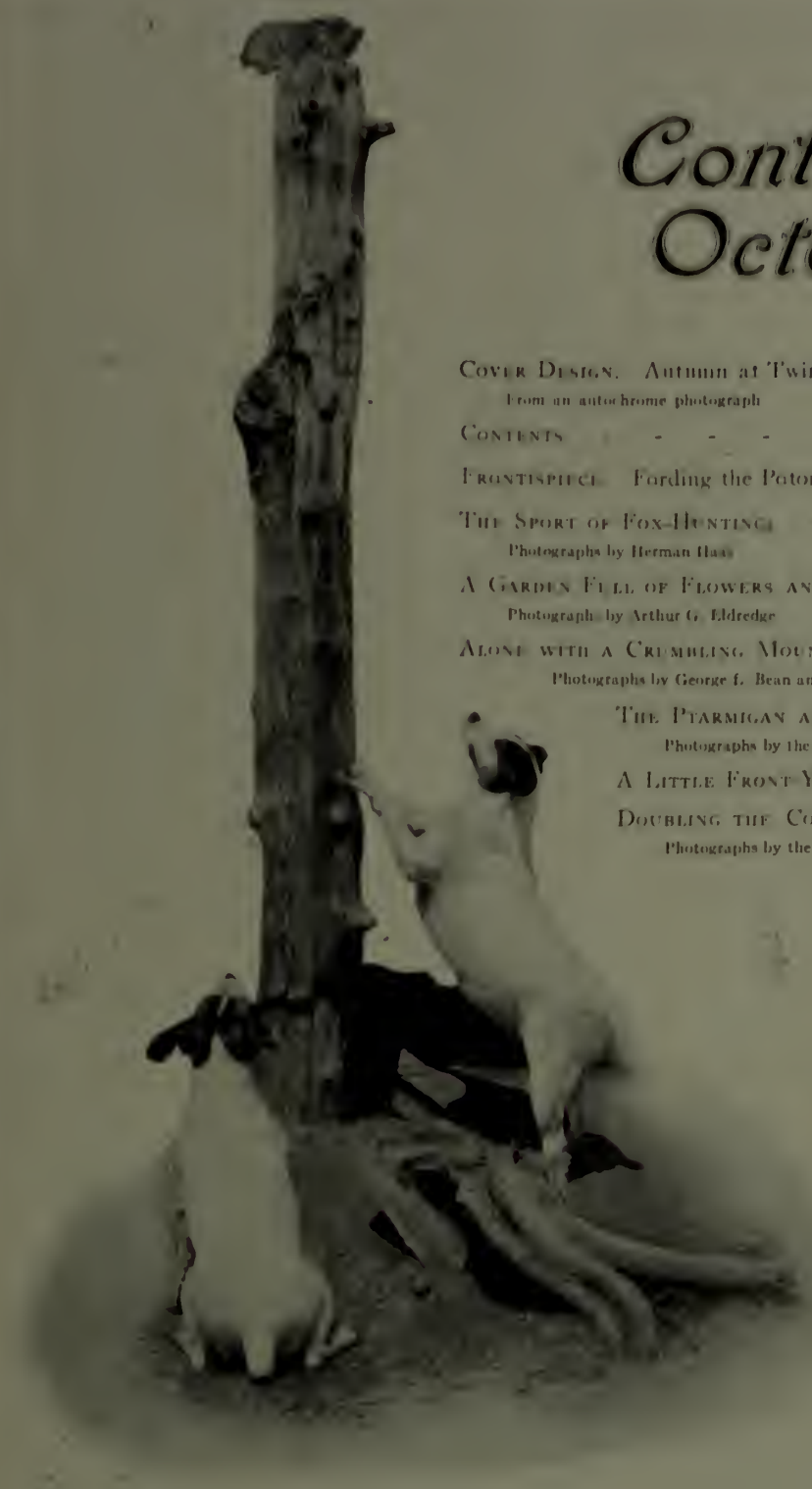

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TO CONTRIBUTORS.—While we are always glad to receive and examine manuscripts and photographs, we cannot hold ourselves responsible for them. All manuscripts which the writers desire returned must be accompanied by sufficient postage.

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COUNTRY LIFE IN AMERICA

VOLUME XX NUMBER 12 October 15, 1911 PRICE, 25 CENTS $4 A YEAR POSTPAID

The M. F. H. must always be first at the appointed place, with his hounds and helpers

THE SPORT OF FOX HUNTING

By HARRY W. SMITH

Master of the Grafton Hounds

Photographs by HERMAN HAAS

[EDITORS' NOTE — *This article is one of a series on "The Joys of Country Life," which we plan to publish from time to time, and which we hope will express the feeling and spirit of those activities which we usually treat in a more practical fashion. "The Joy of Edged Tools" and "The Fun of a Greenhouse" appeared in our December mid-month issue; "The Fun of Driving a Motor-Car" in the January mid-month number; "The Joys of Gardening" in our March 1st issue; "The Joy of Angling" in our May 1st issue; "The Joy of Motor-Boating" in our June 1st issue; "The Joys of Being a Farmer" in our issue of July 1st; and "More Joys of Motor-Boating" in our issue of September 1st. "The Joy of Sailing," by Jack London; "The Joy of Walking," by Anne O'Hagan; "The Joy of Horseback Riding," by Mary Raymond Shipman Andrews; "The Joy of House-Building," and others will follow.*]

FOX hunting, the "sport of kings," which our English cousins have followed so devotedly for a century and a half, with two hundred packs of hounds, at an annual expenditure of millions of pounds, is now coming to its own in America. We have only to look back and find that the seed was sown years ago; for George Washington, mounted on "Blueskin," was an ardent follower of the chase, hunting with his own American hounds, and some years later with the French pack given to him by the great Marquis de Lafayette, which gave splendid sport chasing the gallant red about Mt. Vernon.

When one has been out for a day in the open after the beautiful pack of hounds bred and owned by the Duke of Rutland, at Belvoir castle, following them up hill and down dale, through parks and broad woodlands, mingling with the bravest men in England, and endeavoring to hold his place behind the flying pack, he can but appreciate the call of the sport which, once entered into, holds on forever.

And, looking at the recreation from any point of view, it must be acknowledged that there is none other so happily entered into by all ages and conditions of mankind. There is the boy on the pony, and the old gentleman, a former Master,

Fall and winter are the seasons for fox hunting in Virginia

with his gray hair glistening out from underneath the velvet cap, both keen as mustard and anxious, even if they have to make use of the barways and lanes, to keep as near to the cry of the hounds as possible. The peer and the shoemaker ride side by side and the straightest man after the hounds receives the fullest credit from the countryside.

I so well remember a baker who, for a year or two, followed the Genesee Valley Pack. No one rode straighter, and the cookies and doughnuts which he brought to covertside were more acceptable than any sandwiches from the Major's sideboard.

Then, at Leesburg, last year, there was a little boy whom we called "Bo Peep." He used to just happen around at the meets, riding an old pony, with a bridle tied up with a string, and a saddle whose girth was almost cut through by the briars of the years past. No one was keener than "Bo Peep," and he loved every hound in the pack, and after the first run or two knew their names and cry; and being acquainted from childhood with every rock and fence in the neighborhood, he seldom, if ever, was left behind. Indeed, time and time again, he would show the way over the big rail fences when some of the crack men were craning their necks, wondering where was the best place to jump. He had the true sporting blood and was game to the core. One cold day we were warm in woollen gloves, thick flannels, etc., but what about "Bo Peep?" Just a pair of shoes laced with twine, some so-called woollen trousers fringed at the bottom, a thin cotton shirt, an old coat, and no gloves to cover the red, glowing hands; but his heart was the heart of a sportsman, and all day long he was up in front, where he belonged.

The past three or four years have seen wonderful strides in the sport in the United States. England has its titled packs, owned by the Dukes of Rutland, Beaufort, Grafton, and the Lords Fitzwilliam, Lonsdale, North, and others; but America has its Genesee Valley Hunt, which for years has been under the mastership of its owner, W. A. Wadsworth, Esq., who, with his family, owns some 60,000 or 70,000 acres in the beautiful Genesee Valley. Not far from Washington is the Piedmont Valley where, from generation to generation, the Dulany family have always owned hounds; at Montreal there is the Montreal Hunt which was founded in 1826; and at Castle Hill, Virginia, lives Mrs. Allen Potts, *née* Reives, who is Master of her own pack and follows the chase as did her ancestors.

The Orange County Hunt of New York has a most attractive club house at The Plains, Virginia, where its members, made up from the Harriman family, the Goelets,

There is an invigorating influence in the November woods that is lacking in August

Gerrys, and others, run down by private car, from time to time in the winter, to enjoy the sport.

Near Charlottesville, Thomas F. Ryan not long ago purchased a large property near his old country home at Oak Ridge, and has there installed a splendid pack of American hounds, where he gives the best of sport and extends hospitality to the neighbors of his childhood.

A few miles north, William du Pont, Esq., who journeyed down from Wilmington and purchased "Montpelier," the historic Dolly Madison homestead, one of the show places of the South, has, with his stepson, George Zinn, established a pack of English hounds known as the Gaston Hunt, which, when shown at Washington last spring in the hottest competition, were most successful.

In the Capitol City itself Clarence Moore, Master of the Chevy Chase, gives good sport to those who are game enough to follow, and far up in Vermont, young Watson Webb, at Shelburne Farms, has established a sporting pack for the enter-

Waiting for the ferry

Crossing the Potomac

tainment of himself and his friends when they run up from New York for a few days.

The writer of this article, who is Master of the Grafton Hounds, winners of the Grafton-Middlesex-English-American Foxhound Match of international fame in 1905, having hunted with practically all the different hunts in America, feels, as he has bred his own hounds and hunts them himself, that perhaps his advice would be of service to those who are interested in taking up the most absorbing of all sports.

If sportsmen are keen and foxes run, it is not as much a matter of mere dollars and cents as is at first imagined, and even wire, which is the curse of the fox hunter, may be successfully dealt with if time and patience are taken. A nucleus of two or three congenial spirits is all that is necessary, and as a country free from many settlers is desired, choose a farmhouse at first, situated in some desirable location, for a hunt club, where the country round about will be of possible use for country homes, etc. If possible, arrange at the start so that the properties can be purchased at a certain price, for, as the formation of the club is bound to increase the value of the surrounding desirable locations, a proper option on them should prove a good investment. Put two or three box stalls in the old farm barn and make some shed hound-proof by the use of poultry netting; add a good long run with a barbed wire coping.

Then install a reliable man in the farmer's family as a boarder. He can exercise the horses and hounds on the road, with couples on. The whole expense will not be over $25 or $30 a week and the good sport given to the three or four subscribers gradually leaks out to others who join the club, and within a few years, with a nearby city to draw on, a hunt club of fifty or seventy-five members is established.

From the outset let it be understood that the rules of sport must govern all. The question of clothes and highly-polished horses is simply one of money and is of least interest to those who have the proper feeling in their hearts. Of course, let these looking-glass men come in and subscribe, but let the keen ones keep the club in hand and map out the lines for its future.

For a summer livery I can recommend nothing better than that used in the camp hunts at Grafton — tan overalls and jumpers. The whole outfit costs at the utmost $1.25 and can be washed time and time again; the overalls, with a piece of tape tied and lapped around the ankle, slide into an old pair of hunting boots which, punctured with holes, are cool and comfortable. And with the above quota the whole hunt looks ship-shape for a song.

For winter, let me say that in the snowy, blustery days there is nothing half so useful as a pair of long-legged rubber boots, a Selby cape coat, and woollen gloves. Following the red fox in America makes it necessary for one to stay out hours and hours, dismounting now and then in the wet snow to open bar-ways, etc., and to me there is no pleasure sitting about in the pelting rain with a hunting-coat said to protect your knees, but which acts as a gutter, steering a stream of water down your boot-leg till your foot is frozen and it takes an hour's wrestling with your jack or valet to pull the water-soaked boot off in the evening.

So much for the simple club, the stable, the kennels, and the livery. Now we come to the inhabitants — the Master, the horses, and the hounds. There is no success without a Master or huntsman who thoroughly appreciates the responsibilities of his position, and surely there is no position which is so trying and to which day and night there is no rest.

Every regular rider in the field and every stranger from a distance expects that the Master will be the first after the hounds, and if there is one sign of wavering, how quickly the statement would go round that he was "losing his nerve"; yet he must be strong-minded enough so as not to ride entirely to please the thrusters but for the general enjoyment of those who come out for a lovely day in the open. Many a man with heavy responsibilities in life comes down for a week or two, not to break his bones and worry his family, but to be out of doors, watch the hounds work, and get that exercise which the late T. C. Patterson, of Toronto, described so aptly when he said: "The

Hunting for the scent

In full cry. Farmers permit hunting across their fields when they find that chicken-killing foxes become fewer, and that damages are promptly paid

best thing for the inside of a man is the outside of a horse."

While drawing covers there is no necessity of making the happiness of two thirds of the field uncertain. Take down the top rails, open the gates, go around by the gaps, and save your horse all you can, but when the hounds open, ride straight and stay with the leaders. The first part of the day we give the men of brains a good time, and in the run you can use your brains to keep ahead of the lightweight cracks, whose only desire is to get ahead of the hounds if they possibly can.

There is no more trying position than a Master of Foxhounds in a community. His every move and thought must be open to the inspection of all. It certainly has its glory, but it also has its drawbacks. He may fail, here and there, but if he is a sportsman and out in front with his hounds, half is forgotten. There is the farmer, whose crops must be regarded; there is the field right behind which demands sport; there are the hounds who need to be blooded; there is the biggest subscriber who is never on time; there is the keen sportsman who comes to cover with the hounds; there are the one or two that always stand in the wrong ride and head the fox; and there are three or four game ones who would like to hunt all night.

In the club itself there are those that want to go to church and those that want breakfast at church time; there are the stud grooms that want the best old English hay and expect $1 on the side from the farmers. Day in and day out, it is a constant sizing up of horses, hounds, and men, taking their exact limitations of riding, waking, sleeping, eating, and drinking.

A good Master always has good hounds. That American hounds are best for fox hunting in America the foxhound match, five years ago, thoroughly proved; and there are numberless breeders in the South who yearly produce youngsters which can be purchased from time to time at from $30 to $40 a couple, for what they term in Virginia "just hounds"; but if one wishes to get together a crack pack by purchase, let him go down to Virginia and Kentucky and hunt with neighborhood packs for two or three weeks and choose for himself.

To enjoy the chase thoroughly, however, one must breed his own pack, for that method brings them up to his own method of hunting. The breaking of a pack of hounds to run a fox and nothing but the fox is not difficult where one has plenty of gentlemen in red to hunt and time to hunt them, day in and day out. The scent of the fox is easy to follow, and when once the hounds become accustomed to pursue it they rarely leave it for any other. At Lordvale, my country place in the Park, there are two or three earths which always hold a litter or two in the 600 acres, and in the adjoining 3,000 acres owned by the

(*Continued on page 56*)

The M. F. H. must keep ahead of his field and see that hot-bloods keep off the heels of the pack

The death. This disagreeable feature of the sport seems to be essential to its continuance. Cheated dogs hunt badly

An exceptionally wide hardy border. First come foxgloves, next lemon lilies, then phlox (not yet in bloom), and finally larkspurs

A GARDEN FULL OF FLOWERS AND COLOR

MISS KNEELAND'S GARDEN AT LENOX, MASS., WHICH IS NOTED FOR THE MANY PRIZES IT HAS WON AND FOR ITS PROFUSION OF HARDY PERENNIAL FLOWERS

By THOMAS McADAM

Photographs by ARTHUR G. ELDREDGE

IT IS a singular fact that the greatest prize winner at Lenox is not one of the great estates for which the place is famous, but a garden in the heart of the village which is relatively unpretentious — the garden of Miss Adele K. Kneeland. But it is not singular after all, because Miss Kneeland knows all the flowers and gives her garden the most intimate personal attention. There never has been or will be any substitute for that.

Miss Kneeland's property consists of about five acres, and the gardens comprise about two acres. A walk descends from the rear of the house to the pool shown on the following page, and around this runs a path that leads to the main flower garden, which is a circle of grass surrounded by borders of hardy perennials seen against a background of spruce hedge. There are two minor points of interest, also connected by a walk. One is a circular bit of lawn with a sundial in the centre. The other is an arbor. The design was executed by Mr. J. J. Huss, of Hartford, who deserves much praise for his work in laying out Morningside Park, New York.

An exquisite bit of wild gardening under the old willow by the pool. Myrrh, a plant much used by William Robinson, is described in the article

The garden is on a gently sloping hillside, and the features above named are therefore on several different levels. The soil had to be brought up from below. Such a condition adds considerably to the first cost of a garden, and also to the maintenance, but it also

LOOKING ACROSS THE POOL, OVER A PART OF THE KNEELAND FLOWER GARDEN, TOWARD THE BERKSHIRE HILLS

A robust corner. The two big clumps in the foreground are phlox and *Œnothera fruticosa*. At the right foxgloves are going off, behind are larkspurs

A grand clump of bleeding heart (*Dicentra spectabilis*). Miss Kneeland's garden contains hundreds of species of hardy perennial flowers

adds greatly to the interest of a garden, because of the broad views of the distant landscape and also because the same mass of flowers may sometimes be seen from above and from below, as well as from the ordinary level.

The garden is attractive throughout the period of occupancy, which is late May to late September, and is thought to be most gorgeous in July, when about a hundred varieties of phlox are in bloom, and most perennials are at their best.

I visited the garden in May when the Darwin tulips that line the pool along the walk were prettily reflected in the water. The pool is about 30 x 60 ft., and a willow broods over it. Under this willow is one of the prettiest bits of wild gardening I have ever seen — a colony of the giant Solomon's seal and a colony of myrrh.

Solomon's seal seems to win all hearts by the arching beauty of its stems. The leaves spread themselves like wings, and the plant holds its flowers the way a bird holds its feet in flight. Few plants are so full of poetic suggestion, and none are lovelier near water. The name of this plant is *Polygonatum giganteum*. I should like to see it used near a drinking place for birds.

Myrrh is a very interesting plant which William Robinson uses with great effect in wild garden compositions, especially near water, as at his own home, Gravetye. *Myrrhis odorata*, or sweet cicely, has fern-like foliage, a pleasant odor, and sweet-tasting stems. It grows two or three feet high and bears toward the end of May small white flowers in flat clusters three or four inches across. Robinson recommends it for naturalizing along woodland walks and in open shrubberies. It is pleasant to brush against the foliage.

We liked Miss Kneeland's garden so much that Mr. Eldredge made three trips from New York in order to photograph it at different seasons. Any one who loves flowers and color would enjoy seeing it.

The willow that broods over the pool. This water lily basin is rectangular, and surrounded by mossy stones. Tall native ferns add to the charm

The Kneeland garden is a blaze of color in July. The wealth of bloom is chiefly due to hardy perennials, but annuals are used as fillers

Climbing Engineer Mountain in the Uncompahgre range, which will probably some day be part of a great national park

ALONE WITH A CRUMBLING MOUNTAIN

By ENOS A. MILLS

Photographs by GEORGE L. BEAM and the author

REALIZING the importance of traveling as lightly as possible during my hasty trip through the Uncompahgre Mountains, I allowed myself to believe that the golden autumn days would continue. Accordingly I set off without any bedding, with but little food, and without even snow-shoes.

A few miles up the trail, above Lake City, I met a prospector coming down and out of these mountains for the winter. "Yes," he said, "the first snow usually is a heavy one, and I am going out now for fear of being snowed in for the winter."

My imagination at once pictured the grand mountains deeply, splendidly covered with snow; myself by a campfire in a solemn, primeval forest without food or bedding, a camp bird on a nearby limb sympathizing with me in low confiding tones, the snow waist deep and mountains wide. Then I dismissed the imaginary picture of winter and joyfully climbed the grand old mountains amid the low and leafless aspens and the tall and richly robed firs.

I was impelled to try to make this mountain realm a national forest and felt that some time it would become a national park. The wonderful reports of prospectors concerning the forests and scenery of this region, together with what I knew of it from incomplete exploration, eloquently urged this course upon me. My plan was to make a series of photographs, from commanding heights and slopes, that would illuminate its forest wealth and scenic grandeur.

In the centre of this wonderland Uncompahgre Peak rose high, and by girdling it a little above the timber I obtained a number of the desired photographs, and then hurried from height to height, taking other pictures of towering summits or their slopes below that were black and purpling with impressive pathless forests.

The second evening I went into camp among some picturesque trees upon a skyline at an altitude of 11,000 feet above the tides. While gathering wood for a fire, I paused to watch the moon — a great globe of luminous gold — rise strangely, silently into the mellow haze of autumn night. For a moment on the horizon it paused to peep from behind a crag into a scattered group of weird storm-beaten trees on a ridge before me, then swiftly floated up into lonely, misty space.

Just before I lay down for the night I saw a cloud form in the dim, low distance that was creeping up into my moonlit world of mountains. Other shadowy forms followed it. A little past midnight I was awakened by the rain falling gently, coldly upon my face. As I stood shivering with my back to the fire there fell an occasional feathery flake of snow.

Had my snow-shoes been with me a different lot of experiences would have followed. With them I should have stayed in camp and watched the filmy flakes form their beautiful white bog upon the earth; watched robes, rugs, and drapery decorate rocks and cliffs, or the fir trees come out in pointed, spearhead caps, or the festoons form upon the limbs of dead and lifeless trees — crumbling tree ruins in the midst of growing forest life. To be without food or snow-shoes in far-away mountain snows is about as serious as to

be adrift in a lifeboat without food or oars in the ocean's wide waste.

In a few minutes the large, almost pelt-like flakes were falling thick and fast. Hastily I put the two kodaks and the treasured films into water-tight cases, pocketed my only food, a handful of raisins, adjusted hatchet and barometer, then started across the strange, snowy mountains through the night.

The nearest and apparently the speediest way out lay across the mountains to Ridgway, and the first half of this fifteen miles lay across a very rough section that was new to me. After the lapse of several years the condition appears a serious one, but at the time it gave me no concern that I recall. How I ever managed to go through that black, storm-filled night without breaking my neck amid the innumerable opportunities for accident, is a result that I cannot explain.

I descended a steep, rugged slope for a thousand feet or more with my eyes useless amid the eager falling of mingling rain and snow. Nothing could be seen, but despite of slow, careful going a dead limb occasionally prodded me. With the deliberation of a blind man I descended the long, steep, broken, slippery slope into the bottom of a cañon.

Now and then I came out upon a jumping-off place; here I felt before and below with a slender staff for a place to descend; occasionally no bottom could be found, and upon this report I would climb back a short distance and search out a way.

Activity kept me warm, although the cold rain drenched me and the slipperiness of slopes and ledges never allowed me to forget the law of falling bodies. At last a roaring torrent told me that I was at the bottom of a slope. Apparently I had come down by the very place where the stream contracted and dashed into a deep, narrow box cañon. Not being able to follow it or to make a crossing, I turned and went up stream for half a mile or so, where I crossed the swift, roaring water on a fallen Douglass spruce (I made out that it was a Douglass spruce by the arrangement of its limbs and the feel of the wood in its barkless trunk, the night with its heavy veil obscuring my eyes). During this unusual journey by night I put myself both in feeling and in fact in a blind man's place — the best lesson I ever had to develop deliberateness and keenness of touch.

The next hour after crossing the stream I spent in climbing and in descending a low wooded ridge with smooth surface and gentle slopes. Then there was "one more river" — the Cimarron — to cross. An Englemann spruce, with scaly, flaky bark, that had stood perfectly perpendicular for a century or two, had recently been hurled to the horizontal, providing a long, vibrating bridge for me to cross on. Once across, I started to climb the most unstable mountain that I have ever trodden.

Mount Coxcomb, up which I climbed, is not one of the "eternal hills," but a crumbling, dissolving, tumbling, transient mountain. Every hard rain dissolves, erodes, and uncovers the sides of this mountain as if it were composed of sugar, paste, and stone. It is made up of a confused mingling of parts and masses of soluble and flinty materials.

Here change and erosion run riot whenever the rainbow rises in tranquil splendor above the water-drenched mountain sides. There is a great falling to pieces; gravity, the insistent, is temporarily satisfied, and the gulches feast while the river channel is glutted with crushed cliffs, fleshy acres of earth, and vegetables of broken forests. Here and there these are flung together in fierce confusion.

The summit of Mount Coxcomb—"not one of the 'eternal hills' but a crumbling dissolving, tumbling, transient mountain." Every hard rain changes its face

On this bit of the wild world's stage there are lightning changes of scene — changes that on most mountains would require ten thousand years or more. It is a place of strange and fleeting landscapes; the earth is ever changing like the sky. In wreathed clouds a great cliff is born, stands out bold and new in the sunshine and the blue. The storm king comes, the thunders echo among crags and cañons, the broken clouds clear away, and the beautiful bow bends above a ruined cliff.

Here and there strange, immature monsters are struggling to rise, to free themselves from the earth. Occasionally a crag is brought forth full grown during one operation of gravity, erosion, and storm, and left upon a foundation that would raise corn but never sustain cliff or crag. Scattered monoliths at times indulge in a contest of leaning the furthest from the perpendicular without falling. The potato patch foundations of these in time give way, then gravity drags them head foremost, or in broken instalments, down the slope.

Among the forested slopes there were rock slides, earthy glaciers, and leafless gulches with crumbling walls. Some of these gulches extended from bottom to top of the mountain, while others were digging their way. An occasional one had a temporary ending against the bottom of a kingly cliff, whose short reign was about to end as its igneous throne was disorganized and decomposed.

The storm and darkness continued as I climbed the moun-

On the way to Uncompahgre Peak—a typical mountain trail, the slopes on either hand black and purpling with impressive pathless forests

The towering summit of Uncompahgre Peak rises high in the centre of this wonderland, its bare slopes in strong contrast to the mountains about it

tain of short-lived scenes — a mountain so eagerly moving from its place in the sky to a bed in the sea. The saturation had softened and lubricated the surface; the sedimentary slopes had been made restless by the rain.

I endeavored to follow up one of the ridges, but this was narrow and all the pulpy places very slippery. Fearing to tumble off into the dark unknown I climbed into a gully and up this made my way toward the top. All my mountain experience told me to stay on the ridge and not in darkness travel the way in which gravity flings all his spoils.

The clouds were low and I climbed well up into them. The temperature was cooler and snow was whitening the earth. When well up to the silver lining of the clouds a gust of wind momentarily rent them and I stood amid snow-covered nature statuary — leaning monoliths and shattered minarets, all weird and enchanting in the moonlight. A few seconds later I was in darkness and snow-storm again.

The gulch steepened and apparently grew shallower. Occasionally a mass of mud or a few small stones rolled from the sides of the gulch to my feet, and told that saturation was at work dissolving and loosening anchorages and foundations. It was time to get out of the gulch. While making haste to do so there came a sudden tremor instantly followed by an awful crash and roar. Then r-r-rip, z-zi-ip, s-w-w- r-r-ip — a bombardment of flying, bounding, plunging rocks from an overturned cliff above was raking my gulch. Nothing could be seen, but several slaps in the face by dashes of snow which these rock missiles disturbed and displaced were expressively comprehensive.

As this brief bombardment ceased, the ominous sounds from above echoing among the cliffs shouted warning of an advancing landslide. This gave a little zest to my efforts to get out of the gulch; too much perhaps, for my scramble ended in a slip and a tumble back to the bottom. In the second attempt a long, uncovered tree root reached down to me in the darkness and with the aid of this I climbed out of the way of the avalanche. None too soon, however. With quarreling and subdued grinding sounds the rushing flood of landslide material went past, followed by an offensive smell.

While I paused, listening to the monster groan and grind his way downward, the cliffs fired a few more rock missiles in my direction. One struck a crag beside me. The explosive contact gave forth a blast of sputtering sparks and an offensive, rotten-egg smell. A flying fragment of this shattered missile struck and crushed my left instep.

Fortunately my foot was resting in the mud when struck. When consciousness came back to me I was lying in the mud and snow, drenched, mud-bespattered, and cold. The rain and snow had almost ceased to fall, and while I was bandaging my foot the pale light of day began to show feebly through the heavy clouds.

Slowly, painfully, the slippery, snowy steps were scaled beneath a low, gloomy sky. My plan was to cross the north shoulder of Mount Coxcomb and then down slope and gulch descend to the deeply filled, alluvial Uncompahgre Valley to the railroad village of Ridgway.

With the summit only a few feet above, the wall became so steep and the hold so insecure that it appeared best to turn back lest I be precipitated from the cliff. The small hard points in the sedimentary wall had been loosened in their settings by the rain. Climbing this wall with two good feet in a dry time would be adventurous pastime.

While flattened against the wall, descending with greatest caution, there came a roaring crash together with a trembling of earth and air. An enormous section of the opposite side of the mass that I was on had fallen away, and the oscillations nearly hurled me to the rock wreckage at the bottom of the wall.

On safe footing at last I followed along the bottom of the summit cliff and encountered the place from which the rocks had been hurled at me in the darkness and where a cliff had fallen to start the slide. It was evident that the storm waters had wrecked the foundation of the cliff.

Ridges and gullies of the Bad Lands type fluted the slope and prevented my traveling along close to the summit at right angles to the slope; there appeared no course for me but to descend to the Cimarron River. Hours were required for less than two miles of painful though intensely interesting travel.

It was a day of landslides, just as there are in the heights days of snowslides. The excessive saturation after months of drought left cohesion and adhesion but slight hold on these strange sedimentary mixtures. The surface tore loose and crawled; cliffs tumbled. After counting the crash and echoing roar of forty-three fallen cliffs, I ceased counting and gave more attention to other demonstrations.

On the steeps numerous fleshy areas crawled, slipped, and crept. The front of a long one had brought up against a rock ledge while the blind rear of the mass pressed powerfully forward, crumpling, folding, and piling the front part against the ledge.

At one place an enormous rocky buttress had tumbled over. Below, the largest piece of this, a wreck, in a mass of mud, floated slowly down the slope in a shallow, moderately tilted gulch. This buttress had been something of an im-

pounding, retaining wall against which loosened down-drifting materials had accumulated into a terrace. The terrace had long been adorned with a cluster of tall spruces whose presence produced vegetable mould and improved soil conditions.

On the falling away of this buttress the tree-plumed terrace commenced to sag and settle. This soil-covered débris was well roped together and reinforced with tree roots. When I came along these tall trees, so long bravely erect, were leaning, drooping forward. Their entire foundation had slipped several feet and was steadily crowding out over the pit from which gravity had dragged the buttress.

The trees with their roots wedged in crevasses were anchored to bed rock and were clinging on for dear life. Now and then a low, thudding, earth-muffled sound told of strained or ruptured roots; the foundation steadily gave way while the trees drooped dangerously forward. United on the heights the brave trees had struggled through the seasons and united they would go down together. On the heights they had fixed and fertilized the spoils from the slopes above. These spoils had been held and made to produce and prevented from going down to clog the channel of the Cimarron or from making with the waters the long, sifting, shifting journey, joining at last the lifeless soil deposits in delta tongues by the sea. But the steadfast trees with all their power to check erosion and create soil were to fall before the overwhelming elements.

Further and further the unsupported and water-lubricated foundation slipped; more and more the trees leaned and drooped forward until gravity tore all loose and plunged the trees head foremost into the pit, crushing down upon tumbled tons of rocks, soil, matted mud and roots — all the wreckage of the time-formed terrace that had bloomed. The slide that narrowly missed me in the night was a monster one and grew in magnitude as it brutally rooted and gouged its way downward. After descending more than half a mile it struck an enormous dome rock which stayed a small part of it while the remainder was deflected, made an awesome plunge, and engulfed a small, circular grove in a grassy plot of an easy slope. Most of the towering spruces were thrown down and deeply buried beneath mud, smashed cliffs, and the mangled forms of trees from up the slope. A few trees on the margin of the grove were left standing but they suffered from cruel bruises and badly torn bark.

On the farther side of the grove a number of the trees were bent forward but only partly buried; with heads and shoulders out they were struggling to extricate themselves and now and then one shook an arm free from the débris. Over the place where a few hours before tall tree plumes had stood in the sky, a fierce confusion of slide wreckage settled and tumbled to pieces, while the buried and half buried trees whispered, murmured, and sighed.

"I was impelled to try to make this mountain realm a national forest, and felt that sometime it would become a national park. The wonderful reports of prospectors concerning the forests and scenery of this region, together with what I knew of it from incomplete exploration, eloquently urged this course upon me"

Out with nature trees are supposed to stand in one place all their lives, but one of the most interesting movements of this elemental day was the transplanting, by gravity, of an entire clump of tall old firs. Water released these trees and they appeared to enjoy being dragged by gravity to a new home and setting.

I was resting my foot and watching a gigantic monolithic stone settle and come down gracefully, when a tree clump on the skyline just beyond appeared to move forward several yards, where it made a stop.

While trying to decide whether they really had moved or not, they moved forward again with all their earthly

claims, a few square rods of surface and all their foundation beneath. With all their tops merrily erect they slid forward, swerving right and left along the line of least resistance, and finally came to rest in a small, unclaimed flat in which no doubt they afterward grew up with the country.

The many sized slides of that weird day showed changes of position varying from a few feet to a mile. Several plowed out into the Cimarron and piled its channel more than full of spoils from the slopes. Through this the river fought its way and from it the waters flowed away richly laden with earthy matter.

The great changes which took place on this mountain in a few hours were more marked and extensive than the alterations in most mountains since the Sphinx commenced to watch the shifting, changing sands by the Nile.

Mid-afternoon the air grew colder and the snow commenced to deepen upon the earth. Bedraggled and limping I made slow progress down the slope. Just at twilight a bear and her two cubs met me. They probably were climbing up to winter quarters. I stood still to let them pass. At a few yards distance the bear rose up and looked at me with a combination of curiosity, astonishment, and perhaps contempt. With a "woof, woof," more in a tone of disgust than of fear or anger, she rushed off, followed by the cubs, and all disappeared in the darkening, snow-filling forest aisles.

The trees were snow laden and dripping, but on and on I went. Years of training had given me almost superhuman physical endurance, and this, along with a peculiar mental attitude that nature had developed from being alone with her in her wild places and in all seasons, gave me a rare trust in her and an enthusiastic though unconscious confidence in the ultimate success of whatever I attempted to accomplish outdoors.

Looking down upon the forest and the river. In times of landslides the channels of these mountain rivers become choked with fallen earth and trees and stones

About two o'clock in the morning I came to the river. The fresh débris on my side of the stream so hampered traveling that it became necessary to cross. Not finding any fallen tree bridge I started to wade across in a wide place that I supposed would be shallow.

Midway and hip deep in the swift water I struck the injured foot against a bowlder, and momentarily flinching, the current swirled me off my feet. After much struggling and battling with the turbulent waters, I at last succeeded in reaching the opposite shore. This immersion did not make me any wetter than I was or than I had been for hours, but the water chilled me; so I hurried forward as rapidly as possible to warm up.

After a few steps the injured leg suddenly became helpless and I tumbled down in the snow. Unable to revive the leg promptly and being very cold from my icy water experience I endeavored to start a fire. Everything was soaked and snow covered; the snow was falling and the trees dripping water; I groped about on my hands and one knee, dragging the paralyzed leg; all these along with chattering teeth and numb fingers made my fire-starting attempts a series of failures.

That night of raw, primitive life is worse in retrospect than was the real one. Still I was in deadly earnest at the time. Twenty-four hours of alertness and activity in the wilds, swimming and wading a torrent of ice water at two o'clock on the morning, tumbling out into the wet, snowy wilds miles from food and shelter, a crushed foot and a helpless leg, the penetrating, clinging cold, and no fire, is going back to nature about ten thousand years farther than it is desirable to go. But I was not discouraged even for a moment and it did not occur to me to complain, though, looking back now, the theory of non-resistance appears to have been carried a trifle too far. At last the fire blazed. After two hours by it I went down the river greatly improved. The snow was about fifteen inches deep.

Shortly before daylight I felt that I was close to a trail I had traveled that came to the Cimarron near Court House Rock. Recrossing the river on a fallen log I lay down to sleep beneath a shelving rock, with a roaring fire before me, sleeping soundly and deeply until the crash of an overturned cliff awakened me.

Jumping to my feet I found the storm over, with the clouds broken and drifting back and forth in two stratas as though undecided whether to go or to remain. Above a low lazy cloud I caught a glimpse of Turret Top and turning beheld Court House Rock.

The foot gave no pain as I limped along the trail I had so often followed. Now and then I turned to take a photograph. The stars and the lights in the village were just appearing when I limped into the surgeon's office in Ridgway.

Editors' Note.—That "truth is stranger than fiction" and infinitely more interesting, was never better exemplified than in the foregoing story. This article—which we believe even surpasses in thrilling interest those that have gone before ("At the Stream's Source" and "Racing an Avalanche")—is the third in Mr. Mills's series telling of his experiences in the Rockies, which he has thoroughly explored, alone, unarmed, and afoot, at all seasons of the year. He has scaled the highest peaks, some of them in midwinter, and has lived alone in the open for weeks at a time, companioned only by his faithful collie, Scotch.

Following this will come "The Story of Scotch," who died in what he supposed to be the fulfilment of his duty, and later "Heating the Orchard."

Willow ptarmigan — seven hens and one cock, photographed at a distance of eight feet. This species is similar in size and shape to the rock ptarmigan, but has a more friendly disposition and less sombre plumage. The males are especially beautiful in coloring

THE PTARMIGAN AND HIS HOME

By ROBERT L. WARNER

Photographs by the author

Rock ptarmigan. Note the white winter feathers

IN ORDER to make the acquaintance of the ptarmigan it is necessary either to journey into the snows and ice of the far North, or to climb up to the very highest glacier valleys among the frozen peaks of the Rockies or Cascades where circumpolar conditions are reproduced. While this curious bird is essentially a sub-arctic type, it is occasionally found among the isolated fields of eternal snow as far south as Colorado and northern New Mexico, and it is an interesting example of the slow development of species to observe that the bird of the peaks of New Mexico, stranded there by receding ice at the termination of the glacial epoch, is said by naturalists to exhibit no characteristic difference from the original stock of the North whence it came.

My own first experience with these birds was the result of a journey by pack train into British Columbia among the glaciers and high plateaus of the easterly Cascades. After several days' travel along the shores of the lakes and lower rivers which feed the mighty Fraser, our trail led us upward out of the big timber, through the quaking aspens, and at length after much toil and tightening of cinches and pack ropes, we found ourselves upon the summit of a high spur of the main range far above timber line, threading our way across the tiny meadows full of brilliant wild flowers which lay between the glistening snow fields. Here we found the first rock ptarmigan, a flock of five of the gray-and-white birds appearing among the stones along a small stream which emerged from the bottom of a steep snow field. We studied them with interest through the glasses, but upon attempting a photograph, found them entirely distrustful, clucking suspiciously and stepping along smartly over the rocks and moss, just out of range of our lenses; and this shyness we discovered to be generally characteristic of the rock ptarmigan, which when in large flocks would fly up many yards ahead, clucking wildly and scattering in every direction; and when in smaller numbers would crouch close among the gray rocks, or with heads erect keep moving away from the approaching camera and refusing to be shooed along by our Indians up to an ambushed photographer — a method which we later employed more successfully with the willow ptarmigan.

The rock ptarmigan is a bird of storms and ice and raw mists and bleak winds; in the summer gray as the rocks among which he lives, in winter white as the whirling snows in the midst of which he survives after every other feathered living thing — save only the fearless eagle — has fled to the lower valleys.

His brother, the willow ptarmigan, lives lower down by five hundred or a thousand feet, among the dwarfed shrubs which mark the upper edges of tree life, and while similar in size and structure is of a less sombre plumage and more friendly disposition than the ghostly gray spectre of the upper world, the rock ptarmigan. The males of the willow ptarmigan especially are beautiful birds, brownish gray upon the backs and wings, with rich reddish brown throats almost chestnut in color, and dazzling white breasts.

After our unsuccessful first attempt upon these birds,

The home of the rock ptarmigan — "a bird of storms and ice and raw mists and bleak winds"

we continued our climb along the summit of this spur, viewing from the top with exclamations of wonder the marvelous mountains, peak after peak with glaciers innumerable shining along the western horizon — the heart of the Cascades. Then down again into the timber to camp at Stick Lake, with trout for supper.

Our first acquaintance with the willow ptarmigan was formed on a side trip southeasterly into the Castle Mountain country, which I made for three days with a small outfit. Riding along just above timber line one morning, suddenly my Indian fell back and pointed out to me a considerable flock of these birds some distance above us, among the low shrubs.

Willow ptarmigan. The camera was concealed in the bushes at the right, and the birds allowed themselves to be driven within close range

We tied our horses and I crawled into a position of advantage and focused the camera, while Jack attracted the attention of the birds at a little distance on the other side. Then by advancing slowly he was able to drive them right up to me without their taking to flight until alarmed by the click of the shutter at a distance of nine or ten feet. The result as you may see was quite satisfactory, for eight of the birds appear in perfect focus beside the bush near which I lay concealed.

Our most successful engagement with the willow ptarmigan, however, was had upon another excursion which I took with the Indians twenty miles to the northeast of Jack's Valley, to explore a high old glacial moraine many thousands of acres in extent. Along the edges of this big flat country, where it broke off into abysmal depths of cliff and slide rock, and about the margins of little lakes which dotted its surface, we found several flocks of these fine birds, and many ambushes and much "shooing" and crawling produced a number of very satisfactory pictures.

Usually this bird when first seen would run along smartly among the low shrubs, crouching now and then as if inclined to fly, but preferring to trust to its legs to find a way past us as I slowly approached with extended camera, while my Indians circled about in front barring the way with outstretched arms. After a half hour of patient approaches and watching, however, the birds would seem to gain confidence in us and gradually give over the attempt to escape, settle down contentedly in the bright sunlight, and sit for their pictures with becoming patience.

While these characteristics of the willow ptarmigan finally made photographing them a comparatively simple matter, our constant attempts to get satisfactory pictures of the large flocks of rock ptarmigan, which were found among the stony barrens bordering the higher glaciers, were fruitless. These birds which in the spring nesting time are said to be quite tame, were now in October most aggravatingly wild, and it was only the good fortune of meeting with a lone bird early one very cold morning that saved us from entire failure.

The sentiment of fear among wild things seems cumulative and individuals will frequently endure an inspection much more intimate than would be suffered were they gathered in flocks with others of their kind. So it proved to be with this bird, which seemed to prefer to keep to the sunny side of a great rock this frigid morning rather than trust herself aloft on the icy blast which swept out of the north, and her image remained upon the last plate which we exposed before turning southward again to escape the early advance of the arctic winter which for so many months fills this high country with impassable snows.

A LITTLE FRONT-YARD GARDEN

By SHERWIN HAWLEY

UNDOUBTEDLY the best treatment for the front yard is a smooth, unbroken lawn, with perhaps a shrubbery border or hedges at the sides and flowers or vines next the house. Also it is the conventional treatment, and if one man on a street decides to put a garden in front of his house, he is breaking no laws and is adding a note of variety to the neighborhood.

Mr. William E. Jones decided to have such a garden at Newton, Mass., and his architects, Kilham & Hopkins, laid it out for him — just a simple, formal treatment that somehow fails to cause offense.

The accompanying photograph was taken when the garden was new, and improvements have since been made in the planting. The garden occupies the entire space between the house and the sidewalk and is saved from the appearance of exposure by the graceful wooden Colonial fence in front. The privet hedges at the sides are now three feet high.

On both sides of this little formal front-yard garden are smooth, unbroken lawns

Steps from the piazza lead down to the central axis of the garden. In the centre is a round pool, from which the gravel paths radiate in four directions. About the pool were originally planted iris and early bulbs, such as Emperor daffodils and poet's narcissus. The four beds in the garden proper, and the two near the house were filled with perennials. Dwarf nasturtiums were planted along the fence. Against the lattice at the house Hall's honeysuckle and wistaria were planted, with Boston ivy against the stone foundations.

The unproductive condition of this cornfield is due to poor drainage, an important matter which is given much attention in field demonstration work

Poor soil and bad seed selection have here greatly reduced the average of the yield Insufficient cultivation is also a frequent cause of it

DOUBLING THE CORN CROP

By J. W. MITCHELL

Photographs by the U. S. Department of Agriculture

THE corn crop of the United States is going to be doubled on the same acreage, thereby adding over a billion and a half of dollars annually to our national wealth. The medium through which this miracle will be wrought is the Boys' Corn Club. Not much notice has been taken of this by the world at large, but it is one of the biggest and most important things the government has ever done. The idea originated with the late Dr. S. A. Knapp, in the Department of Agriculture, and some of its first fruits were shown in the visit of the winning Corn Club boys to Washington. They were boys from eleven to sixteen years old, who had raised crops of corn from four to seven times as large as the average crop of the United States. There were only a dozen of them, but they were the representatives of over 46,000 boys who had been raising record crops of corn in the Southern states. More than that, the parents and neighbors of all these boys confessed that the methods were practical and are now following the path of corn raising that the boys have pointed out.

The average production for the United States has been only 25.5 bushels an acre, although there was no reason why on the same acreage and at the same expense it should not have been 50 bushels. It might even have been 80 or 100 bushels, for there are many up-to-date farmers now raising 100 bushels to the acre. But one has to know how.

For years the Department of Agriculture has been devoting much of its energy to studying corn. Seed selection, improvement of the seed bed, better cultivation, and a few other things that cost care, but little money, have been found out by careful experiment. The results of these researches have been embodied in pamphlets and scattered broadcast. In some places they have taken hold. In most places they have not. In recent years the Department has tried the experiment of sending out field agents who know how, and who by insisting on "government methods" for a single season train the farmer to double his crop without additional expense.

It was from this demonstration work that the Corn Club idea started in the South. The farmers there seemed more in need of a helping hand than elsewhere. The cattle tick, the boll weevil and the hook worm had combined to stunt the development of what it would seem ought to be the garden section of the United States. As the boys were more teachable and less opinionated than the men, Dr. Knapp and the field agents started working out the Corn Club idea among them first. This was four years ago. It was done in this way:

In a county the boys would be invited to form a Corn Club. During the winter Prof. O. B. Martin of the Department of Agriculture, who was put especially in charge of the work, would send them circulars on seed selection, fertilizers, cultivation and other subjects that could be studied theoretically. In the early spring the boys would select seed, test its germinating power by simple experiments and read up on the life history of corn. Then the field agents of the Department would call around and oversee the plowing and the planting. The public school teachers, the local business men and the state commissioners of agriculture would be enlisted and would keep an eye on the development of the crop.

Each boy was allowed a measured acre and a strict account was kept of the money spent on his crop in labor and fertilizers. Even where he did the work himself there was 10 cents an hour for labor charged against the crop and 5 cents additional for each horse. The rental value of the average land was placed at $5, and that was charged against the crop too, and for each two-horse load of manure it was charged with another $2.

When the crop was harvested, the showing was judged as follows: best yield per acre, 30%; best exhibit of 10 ears, 20%; best written account showing the history of the crop, 20%; best showing of profit on the investment, 30%.

The best record made in the county club was pitted against the best record of each of the other county clubs, and so the state record was established. The bankers and local business men who had been interested in the movement were induced to give small prizes, either money,

Jerry Moore, of South Carolina, a member of the Boys' Corn Club, who grew the record crop of 228 bushels per acre. The quality is easily seen to be excellent

farm implements, trips to the state fair, or other things boys think most worth while. Two years ago four states offered trips to Washington as the first prizes. The four winning boys went to Washington, met the Secretary of Agriculture and were given diplomas recognizing their work. Last year there were 46,225 boys in the competition and eleven states were represented. Governors of the several states met the state and county winners; the records were shown at the state and county fairs, and the eleven high-score boys who were sent to Washington were given a great send-off from their respective localities and were given the time of their lives after reaching the national capital.

They met the Secretary of Agriculture, and after listening to a talk on the importance of good work in general and their own work in particular, were given diplomas. They called on President Taft at the White House and were treated like distinguished visitors. They even appeared by request before the House Committee on Agriculture, and after they had been put at their ease and led to answer all sorts of questions, Chairman Scott of the committee declared he thought the Boys' Club movement was the best work the Department of Agriculture had ever done.

One of the boys, it is not necessary to mention names, was the son of a poor country minister. With the prizes he won at state and county fairs, and the price he received for his crop, the profits on his acre amounted to just $1,000. His father said it was the most money he had ever seen at one time in his life.

There was another boy in the competition who did not come to Washington. But he will come next year whether he wins the state prize or not. He was the son of a tenant farmer, a man who owned no land and was farming on half shares. That alone tells a tale in the South if it is not appreciated elsewhere. Apparently the father was hard-headed and pretty average mean, but he has since experienced a change of heart, so there is no harm in referring to the fact in the past tense.

His farm included a lot of cut over pine land full of stumps and never cultivated. His boy, between eleven and twelve years old, wanted to join a corn club. The father did not think much of the idea; said he had been farming all his life and knew all there was to know about raising corn, and he had no use for these new-fangled government ideas anyhow. Still, he told the boy if he would clear an acre of the stump land, he could have it for the crop, provided, of course, he did not ask his dad to spend any money or trouble on it.

The boy went to work and cleared the land. Any one who is personally acquainted with light-wood stumps knows how closely they approximate granite in composition, and clearing an acre was of itself a Herculean task for such a baby; a boy at an age when many city reared children still have a French nurse tagging after them. However, the job eventually was done. And then the farmer took the acre away from him.

Mean? Can any father holding down a city job with his boy in the fourth grade, and wondering if the work is not too hard for him, imagine anything much meaner? Then the tenant farmer told his youngster if he would clear another acre of land he might really have that. What sort of stuff that boy is made of can be judged from the fact that he took up the challenge and cleared another acre. This he was allowed to keep. He selected his own seed and tested it after the methods that had been outlined to him by the Department and raised his acre of corn between times when he was not working on the regular farm.

Another member of the Boys' Corn Club standing in the acre of corn he raised. The wonder is that he is not lost in it

His father's corn patch was on three sides of the experimental acre. The father, who knew all about raising corn, averaged 19 bushels an acre. The boy raised 84 bushels.

This did not win the state prize and the boy did not come to Washington, but his father appeared at a Farmer's Institute meeting that fall and confessed just how mean he had been, and added that if he had known as much about raising corn 30 years ago as that boy knows to-day, he would be well off and living in a decent house of his own instead of farming on half shares.

The sort of pampered children of fortune who have been winning prizes and making record crops was shown by a little personal talk with a few of them. There was Hughey Harden of Alabama. He was one of the oldest of the party. He is approaching 17, and has not been to school till this year for seven years. This year as the result of his corn work he was able to put in five months of the school term. To get to the school he walks three miles and back every day. He intends to stick till he has finished the course at the State Agricultural College at Auburn, Ala. His father is a hard-shell Baptist preacher. Hughey has ten brothers and two sisters and naturally will not get much help from his father, but he intends to handle two acres in corn and one in cotton next year, and as soon as school is over for the year he will devote his entire time to his farming.

Archie Odom, the winner of the second prize in Alabama, made 177¾ bushels on his acre at an expense of 23 cents a bushel. He is a patriarch of fifteen, the youngest of eight children, four brothers and three sisters, but he is the head of the family at home, the rest being married. He takes care of his mother and two unmarried sisters. He was compelled to quit school to work a year ago, but he has gone back and plans continuing in the Corn Club and going to Clemson College. In addition to his acre in corn last year he made two bales of cotton off three acres.

It may be explained that the reason these record crops mean so much to the boys is that the corn sells for seed corn in their region at several times the market price. Some of them in a little while will turn their attention to raising seed corn altogether.

One of the tiniest tots of the lot was Jerry Moore, of Winona, S. C., who raised the 228-bushel crop. He is the son of a Methodist circuit rider and the youngest of nine children. He raised his corn on the parsonage lot and consequently had no rent to pay for it, but he charged himself $5 for the rent in calculating the cost of the crop.

Floyd Gayer, of Oklahoma, is another of the little fellows. He raised his corn on land that his father rents from an Indian. He is the youngest of three children and is still at school. He plans to make enough money to continue through an agricultural college. This year in an open competition with men at Ardmore he won $25 in gold and the boys' prize of $25. The people of Ardmore promised to send the boy to Washington in the spring, but Senator Gore offered the state prize and the boy won that. Next year he plans to put five acres in cotton. His list of prizes is remarkably various. He won a Jersey cow worth $50, a pair of shoes, an overcoat worth $10, two pigs, $50 in cash, a $5 suit-case, a $5 hat, a rug and an axe.

Joe Stone, of Georgia, is another boy prize winner who has to walk three miles to school and whose father farms on half shares.

These are some samples of the Corn Club boys. Not only have they all raised big crops, but the corn from each of these record crops has been sold for seed to surrounding farmers for next year at as high as $3 a bushel, and each of the demonstration acres has been visited by an average of 100 farmers who wanted pointers on how it was done.

No wonder the officials of the Department of Agriculture are pleased. It is the biggest stride toward doubling the corn crop of the United States that has yet been made. It has interested more of the younger generation in farming in the South than ever before, and the idea is spreading.

Dr. Knapp, the father of the movement, drew a sigh after the boys had been photographed with Secretary Wilson. "How about me?" he asked, with a look of satisfaction that belied the words. "More work next year, that's all."

"But I'll tell you," and he dropped to a confidential tone, "Preach 'back to the farm' all you want. But just show the boy that he can make more money staying on the farm than he can going to the city, and you won't have to do any more preaching."

Comparison of seed corn where no government demonstration work had been done (at the right), and the sort of seed selected in the same region after a year of demonstration work

WARNING!—THE HICKORY BARK BORER IS WITH US

THE LIFE STORY AND HABITS OF A CREATURE THAT BIDS FAIR TO RIVAL THE CHESTNUT BLIGHT AND THE SAN JOSE SCALE IN DESTRUCTIVE ACTIVITY—HOW TO FIGHT HIM

By HERMANN W. MERKEL
Forester of the New York Zoological Gardens

Photographs by W. T. Randolph and the author

The hickory bark borer much enlarged

WHEN a physician finds a case of a malignant, contagious disease, he reports it at once to the proper authorities, who take steps to prevent its spread and to forestall certain disaster.

When a plant pest appears, no such action is taken, in most cases, until it has become so widespread as to make it almost impossible to stamp it out. Fortunately many plant pests confine themselves to one genus or at least one group, as the chestnut blight, the pine scale, euonymus scale, elm leaf beetle, etc. Occasionally, however, such omnivorous feeders as the gypsy moth, brown-tail moth, and tussock moth become so numerous that they defoliate every tree and shrub for miles, making desolate the parks and forests and killing millions of trees.

Most of these pests could have been held in check without any difficulty had they been discovered sufficiently early, or had the proper steps for their extermination been taken immediately upon discovery. This is especially the case with leaf-eating insects that can very easily be exterminated by a stomach poison such as arsenic, sprayed upon the leaves. More difficult to reach are the leaf miners and the bark and wood borers, but even against these, certain measures may be used.

Among the latter named class of pests is the hickory bark borer, which has made its appearance in vast numbers in and near New York City and has already killed hundreds of fine hickory trees. The beetle is present in Long Island, about forty trees having been killed by it in Prospect Park, Brooklyn. In the New York Zoological Park, I found only five infested specimens, but hundreds have been killed in Pelham Bay Park and north of the city line. Just how far the present outbreak extends is not known at the present time, and it will be almost impossible to state where it started. No doubt the destruction of birds by foreigners, small boys and marauding cats is responsible to a great extent.

Former appearances of this beetle, unless checked at once, have always resulted in the loss of fully 90 per cent. of all the hickories within the infested area, and this is exactly what is bound to happen again unless the most thorough and radical steps are taken. In 1901 this proved the case in the Genesee Valley over an area of two hundred acres. An idea of the enormous number of larvæ found in some of the trees may be formed by the fact that a count of the galleries upon a piece of the trunk half a square foot in area, proved that 612 larvæ had been working in this small space.

In giving a description and life history of the beetle, I can do no better than quote from a work by Dr. E. P. Felt, State Entomologist of New York, called "Insects Affecting Park and Woodland Trees," and from a letter from him to the editors of COUNTRY LIFE IN AMERICA.

"The adult insect is a small brown or black beetle about one-fifth of an inch in length. This species is more easily recognized by its characteristic work in hickories, as the difference between the adults of the various forms is not very apparent to other than experts. The grubs are about one-fourth of an inch in length, white with brownish heads and powerful, dark-colored jaws.

"The life history of this borer may be summarized as follows: The beetles appear from the last of June and may be found in New York State up to the middle of August. They bore young twigs, terminal buds and green nuts, evidently for food, and in this manner they frequently cause the wilting of the leaves and the death of twigs. They attack the bark of the trunk and the larger branches in July, each female making a vertical gallery an inch or more in length along the sides of which she deposits in small notches twenty to forty or fifty eggs.

"Infestation at this stage is indicated by slight borings, both brown and white, lying here and there in the crevices. The early recognition of this insect at this time is quite important, since trees or portions of trees which have been entered should be cut and burned before June 1st. It is comparatively useless to apply this recommendation to trees or portions of trees showing numerous circular exit holes about one-eighth of an inch in diameter here and there on the smooth bark. These latter indicate places where beetles have escaped and, as a consequence, the inner bark may be almost free from the pests.

"It is practically useless to leave infested trees or branches until dead, since if badly infected it is only a matter of a few months before death ensues and the procedure simply results in the maturing and escape of thousands, possibly millions of the little borers capable of attacking other trees. The fact should be emphasized that it is not sufficient merely to cut the infested portions of the tree, but that the bark should be removed or the wood destroyed by burning before the beetles emerge in June. It is very probable that this pest takes prolonged flights, evidenced in part at least, by its general occurrence over extended areas. Furthermore, we have very good evidence to show that an allied form, operating in fruit trees, may fly considerable distances.

"The parental galleries are frequently very regularly placed on the tree one above another. The eggs soon hatch and the grubs work in the tissues, at first nearly at right angles to the primary galleries, but those at the extremities soon diverge from the others till they run nearly parallel with the wood fibres. The larval galleries rarely cross each other. Winter is passed by the grubs in a nearly full-grown condition. They transform to pupæ the last of May and the beetles appear a month later.

Many of a new brood can be killed in May by spraying with arsenate of lead

"The preliminary signs of injury are exceedingly important because they frequently tell of the trouble before it has passed the remedial stage. Wilting leaves and dead twigs in midsummer are the principal indications of the beetle's work though this is not usually observed till the trees begin to die at the top from no apparent cause."

During the winter months, each of the horizontal galleries of the previous summer and fall will have its end occupied by a larva. If the galleries are empty, one may be sure that they are of former seasons and that the adults have flown; as indeed may be seen by the numerous exit holes in the bark. These exit holes appear to be a trifle smaller than those through which the adult enters, and are found scattered promiscuously over the bark, while the entrances, as far as I can see, are always in some crevice and sometimes difficult to locate. The beetle apparently dislikes to drill through the hard outer bark, or it may be possible that it wants to hide its tunnel entrances.

It will be seen from this review that the cycle of life is completed in one year, which means rapid breed-

Scene in Pelham Bay Park, New York, last winter. All of the white-banded trees are hickories of various kinds killed by the hickory bark borer

Holes through hickory bark made by emerging beetles during the previous season

ing. Only a few parent insects are necessary to kill or seriously injure a tree, because the destruction of the cambial layer by the horizontal galleries chokes the tree as effectually as though completely girdled with an axe.

Apparently all species of hickory are alike to this anti-conservationist. I have found it to attack shagbark, pignut and big-bud trees with absolute impartiality, and as the adults are said to fly long distances, and its spread is undoubtedly aided by the transportation of infested logs and cordwood into hitherto uninfested districts, the pest may make its appearance in almost any sections where there are hickory trees. Should it reach the vast number of newly established pecan orchards, the resulting damage would undoubtedly be enormous.

This hickory bark borer, belonging to a family (*Scolitidæ*) of notoriously pernicious habits and numbering, according to Kellog in "Insects," 150 species in the United States, causes most of the insect damage to the American Forests. Mr. Gifford Pinchot has estimated this to amount to the enormous sum of $1,000,000 yearly. The red cedar and various pines, oaks and fruit trees are among those commonly attacked by these beetles.

On account of the extreme destructiveness of this pest, every owner of hickory trees in localities where the beetle is known to exist should closely examine them for holes in the bark; using a scraper or guage to determine the presence of the galleries under the bark. All dead or badly infested trees should be cut down. If the larvæ are present, the bark should be peeled and burned at once with all the brush and limbs that are too small to peel. Slightly infested trees should have the diseased limbs or even spots on the trunk cut out, although it is barely possible that certain volatile liquids, such as gasoline or carbon bisulphide, injected into the parental tunnels may reach and kill the larvæ. These may be injected with an ordinary oil can, using a tip adapted to the size of the burrow and sealing the orifice after the injection is made with hard soap, putty or similar material. Undoubtedly many of the new brood can be killed by spraying at the proper time with stomach poisons as Dr. Felt suggests. Unless the tree in question, however, is a very valuable isolated one, I would advise immediate cutting down and burning.

Dr. Felt's method of spraying consists in the use of arsenate of lead, using 4 pounds (15 per cent. arsenic oxide) to 50 gallons of water about

Trunk of a dead hickory from which the bark has fallen, showing the work of beetles

the middle of May and taking special pains to cover the twigs and base of the leaf stalks. This is of value in destroying the beetles at the time they begin to gnaw their way into the twigs and leaf stalks. A moderate power spraying outfit capable of delivering a one-quarter or perhaps three-eighths inch solid stream at a pressure of 100 pounds or more would make it possible successfully to spray the most of the trees from the ground, and at a comparatively slight expense.

Aside from spraying with poison I would suggest the advisability of experimenting with a thick lime-sulphur wash or, if that be not available, an ordinary lime wash to which salt has been added to increase its adhesive properties. This application should be made to the trunks and the branches the latter part of June or early in July, for the purpose of filling the crevices with a material which would be disagreeable to the parent insects and thus, in large measure, ward off attack. There is evidence to show that similar treatment has been very successful in the control of the allied fruit tree bark beetle, and I therefore suggest testing it out with this hickory pest.

The most promising lime-sulphur wash to be used against the hickory bark borer is a modification of the so-called Scott's self-boiled lime sulphur wash. This is made by using 8 pounds of stone lime and 8 pounds of flowers of sulphur, or fine sulphur flour. The lime should be put in a barrel and enough water poured on it almost to cover it. As soon as it begins to slake, add the sulphur, previously sifted so as to break up the lumps. Frequent stirring is necessary and more water added until a thin paste is formed. This combination should be allowed to cook for several minutes and then it may be diluted to about twenty gallons and applied, preferably with a coarse nozzle, from the ground to the larger limbs and trunk of the trees, taking special pains to cover the upper portions of the trunk.

This wash has not been tested out for this purpose, and so is published only as a tentative recommendation worthy of trial. There is, however, reason to believe that excellent results would accrue, since the experiments of Professor Gossard against an allied borer in fruit trees have been very satisfactory.

In making a lime wash it is simply necessary to secure a good lime which will slake actively, leaving a little sediment, and then to dilute so that it will spray easily. It would not be safe to add much salt to applications made in midsummer. The proportion could be determined only after experimentation.

Respecting methods of spraying these materials, economy would render it necessary to have a high power spraying outfit with accompanying hose and nozzles. Probably the long, solid-stream nozzle recently devised by those in charge of the gypsy moth work, would prove the most efficient, since the applications could be made very rapidly from the ground and therefore at relatively slight cost.

Above all, if the beetle is found to be present on your property, warn others and instigate a concerted effort. Do not let your neighbor send to you healthy specimen insects from his infected ones and *vice versa*. Harbor no bird-destroying cats, for undoubtedly the woodpeckers and other insect eaters will do much to keep the pest in check.

That prompt cutting is entirely effective in preventing the spread of the disease was proven absolutely in Belle Isle Park, Detroit. Here the borer was discovered at work, having killed a great many trees. Prompt cutting and burning, thoroughly done, so completely exterminated the beetle in one spring that not a single additional tree died.

By vigorously employing the above remedies in their proper time, many fine hickories, as typically American as the bison and the red man, since none grow wild but upon North American soil, should be saved from following the chestnut trees to that limbo from whence no tree returneth.

Hickory wood showing vertical tunnels made by parent beetle and galleries made by larvae

Inside of a piece of hickory bark showing galleries made by larvæ

The orchard trees yielded a small quantity of fruit the third year but not until the fourth year did they produce like this

Pear as well as apple trees should not be allowed to grow too tall. Note the drooping branches heavy with fruit on these four-year-old pear trees

CUTTING LOOSE FROM THE CITY

XI. — HOW A PROFESSIONAL MAN, WITHOUT MEANS AND WITH FAILING HEALTH, TRANSFORMED TEN ACRES OF RAW IDAHO TIMBER-LAND INTO A HOME AND A LIVING, AND REGAINED HIS HEALTH IN THE PROCESS

By CHARLES S. MOODY, M. D.

[EDITORS' NOTE — *This is the eleventh in a series of articles giving the personal history of men and women who have had the courage to break away from life in the city and start anew in the country. The stories tell of the difficulties and the successes and just how the start was made and the fight waged. They are human documents calculated to be an inspiration and a great help to others who are contemplating taking this momentous step.*]

JUST ten years ago now I sat in the office of a friend, an eminent specialist in a Western city, and listened to, or rather read, my verdict. After thumping my chest, listening to my respiration and heart action, and inquiring into my antecedents, he turned to his desk and wrote.

R

One small farm.
Sig. — Live on it.
Blank, M. D.

This he handed to me without a word. I took it, glanced at it, thanked him, and retired.

The prescription was easy to write, but where was the apothecary who could compound it? I returned to the hotel and handed it to Wisdom (Wisdom is my wife); she, woman-like, said:

"Well, that's what we will do."

"Doubtless," I responded, "but where is the money coming from to buy the farm, and how are we going to live while it is being made to produce?"

She shook me playfully by the shoulders and replied, "Oh, you of little faith. Has there ever been a time in our lives when we were in real need? Has there not always been some way?"

I was forced to admit that there had always been some way.

Without more ado we set about filling the prescription. It was no easy task. Small farms there were in plenty, but their owners were so inconsiderate as to want cash for them. We could not find a seller who was willing to accept promises in lieu of coin for his bit of earth.

Finally our attention was directed to the timbered region where we eventually located. There was to be found land, covered with stumps and fallen logs, which the owners were willing to sell upon a very small deposit. It was a very small deposit that we tendered in part payment of ten acres of land, which, to the uneducated eye, did not look very promising from an agricultural standpoint. The gentleman who sold it to us, however, insisted that beneath the mass of fallen logs and tangled blackberry vines lay as fine soil as ever the sun shone upon. It was the best we could do. I was resolved to take the medicine my friend had prescribed, bitter though it might prove.

This is a simple tale of how we, without money or experience, settled upon a plot of raw land in a new country, and not only lived but managed, by economy, to lay by a little.

To tell this tale properly I must take you back with me to the very beginning and lay bare facts as they were. When we finished paying the man who sold us the place our available cash capital amounted to exactly $16. In addition to that amount we possessed clothing sufficient for the year, enough household furniture to equip our dwelling — when we built one — and a small stock of provisions consisting principally of fruit that Wisdom had canned the fall previous.

With four of the sixteen dollars I bought a tent at second hand which I erected upon the site of our future home. The remainder of the sum was expended in a cross-cut saw, an axe, sledge and wedges, spade, hoe, rake, and a few groceries. When these were all brought to the tent they looked very inefficient weapons with which to combat the wolf of hunger. I was setting out upon a campaign not only against hunger but also against a more insidious enemy.

It would be untrue were I to tell you that I faced the problem without quailing. There were times when my heart sank within me and I was ready to throw up the whole thing and return to my profession. At such times Wisdom always came in with her

The orchard in early spring. Note how the trees have been headed down to prevent too tall growth and subsequent damage by high winds

While the trees were growing and before the limbs were large enough to shade the ground, the space between the rows was used for strawberries and vegetables

woman's good sense and restored my courage. In front of the tent I built a bower of green fir boughs and beneath this we set up the cooking stove. Several packing boxes served for cupboards, another for a dining table. There, beneath the shade of the boughs, we ate our humble food and thanked God for the pure air and the sunshine. There were days in March and April when it rained, and even flurries of snow came, driving us into the tent, but the sun always struggled through the clouds and smiled down upon us.

My first task was to clear the ground about the tent for a garden. At first I intended piling the charred logs into heaps and burning them, but it did not happen that way.

One evening a man came by and halted where I was at work. He looked me over, then turned away his head, ostensibly to expectorate a quota of tobacco juice, but in reality to smile.

"What you goin' t' do with them logs?" he asked.

"Why, burn them," I answered.

"That's jes' what I thought," he replied. "Goin' t' burn th' best lot of cedar post timber in this country."

The remark came like an inspiration. "Why, is that so? Where can I dispose of the posts if I should make them?"

"Well, seein' it's you, I'll take 'em myself. I'm buyin' posts jes' now."

The Yankee in me came out instantly. "What are they worth?"

"I'm payin' two cents f'r good cedar posts," he replied.

A rough cabin like this makes a very comfortable abiding place while the home is in the making and money is not plentiful

In short, before the man departed we had struck a bargain that I should make all the cedar timber up into posts, for which I was to receive two cents each where they lay. I learned afterward that the going price of posts at that time was three cents each, but I set the loss down as the amount paid for experience, I have found that we generally have to pay for experience and I considered the price in this instance rather cheap.

I had never had any experience in post making or, indeed, in any form of woods work. My work in that line had been limited to making kindling for the kitchen fire out of goods boxes with a hatchet. When I came to use my new saw I found that it "pinched" and would not cut through the log. In my ignorance I pondered over this misfortune for several days, during which time my supply of posts was not being greatly increased. In fact they were so limited that I felt ashamed when Wisdom came out to see me at work and learn how I was faring.

In this, too, I was enlightened by one of the natives. He lived only about five miles away and dropped over one afternoon to borrow a hand saw and exchange gossip. He stood watching me tugging at the saw for a few minutes before he ventured an opinion. Then he suggested,

"Why in thunderation don't you set that saw? Then it will cut."

"Set it? How do you set it?"

He informed me that the reason my saw did not cut was that the teeth needed spreading so that the cutting edge would be wider than the back. You may see from this how ignorant I was of important things.

My new friend returned the next morning, bringing his "set" and showed me how to dress my saw. I have always been grateful to him for the knowledge.

Before April gave place to May I had some two thousand bright red cedar posts piled up in handsome array upon my lot. My dealer hauled them away and handed me two twenty-dollar gold coins, the first fruits of my labor. We were opulent; that night we sat up and planned what things we should purchase with our wealth, things most needful to our enterprise. I was for investing the amount in fruit trees, but Wisdom had read somewhere that fruit trees should be planted in the fall; then she reminded me that we had no place to plant them if we had them. She insisted upon buying a hand cultivator and seeder, and as usual, she had her way.

I forgot to mention that as soon as we settled upon our acres I had written one of our senators for seeds for planting. Now, a great deal of sport is made of this free distribution of seeds, but let me tell you that in our case it was a godsend.

One day I got a verbal message from the postmaster at the little office down the lake that there was a "seed store down there f'r me an' f'r me to come an' git it." Accordingly I went down and carried away my consignment of seeds. There were two mail bags full.

I had cleared a plot of ground about the tent and spaded it for planting. The time was at hand for seeding and we set to work. By following the directions printed upon the packages we were able to make fair headway, only we succeeded in planting many things that were not suited to our northern climate. Upon the whole, however, we did very well, and in a few weeks had the satisfaction of seeing our garden turning green beneath the amorous kisses of the sun.

After the garden was in I returned to my post making. I had grown quite expert by this time and turned out posts like an old hand. In time I exhausted all the cedar timber, leaving a great deal of pine and larch. By this time also I had learned not to waste anything. I turned in and manufactured the baser timber into cord wood, which commanded a fair price on the car at the little siding. This all took time, and summer was beginning to ripen into autumn. Already the nights were becoming chill and there was an airiness about the tent which warned us that it would hardly do for a winter dwelling. We must build a house. With

timber all about us the natural thing was to construct one of logs, but somehow I disliked a log house; mine must be of lumber.

Not many miles away a little sawmill growled and wrestled with the great pine logs floated down to it by the lake. The proprietor wanted — nay needed — his accounts adjusted. In my teaching days I had instructed the youth of my country schools in the mysteries of single and double entry. I applied to him and was given the job of straightening out his ledger. The task was harder than making posts, but I took it out under the arbor where I could look up and see the sunshine, and see the garden grow, and there I wrestled with the task until the good man could actually tell who owed him and whom he owed. For this I was paid in rough lumber sufficient to build a small house. He even drew the lumber for me, using one of his logging teams for the task.

The hardware we bought at the country store, paying for it with the products of our garden. I very much fear that house would not have served as a model for either an architect or a builder. It was a primitive structure, but when we moved into it we were as happy as though it were a baronial hall. There were two rooms each 12 feet square, a door in the south end, two windows in the side and one in the north end. The walls were rough, the floor no better, the door I made myself, choosing the smoothest boards for the purpose. It had no lock, for what need had we of locks and bolts? Neither had it a chimney, but a round opening in the roof through which the stove pipe ran, also through which the rain descended when it rained. Bless the Sunday newspaper; a year's subscription to one supplied the paper for our walls. These Wisdom decorated with bright pictures clipped from magazines. Do not, I beg you, smile in derision at our ideas of art. Perhaps our ideas are as exalted as your own. We loved color and were fain to feed that love with those things which came to our hand, then too, a Rembrandt would have been out of place upon that wall.

Our lordly vegetables throve amazingly. That autumn we garnered enough potatoes, turnips, and cabbages to supply our needs for the winter, besides having several sacks of each for market. Our own supply I stored away in an earth cellar built behind the house. It is astonishing how few things one really needs in this world. Had I been told a year previous that the human family could subsist and enjoy good health on the simple fare that graced our daily table I would not have credited the statement. A deer strayed in range of my rifle one day while I was prowling about in the woods, and later a small bear happened along. Both were served that winter upon our table in sundry stews garnished with vegetables. The late summer brought an abundance of berries, great purple dewberries, bursting with sweetness, and dark huckleberries, than which there is no finer fruit.

Winter fishing. An opening in the ice above a shallow spot makes the best fishing-ground

Just before the snows came we planted our first trees, hardy apples, and pears, and plums. Peaches and other less hardy fruits we did not attempt. Wisdom set out two long rows of smaller fruits, on either side of the path leading down to the spring. I must not forget the rhubarb that she planted about the spring.

Winter came and with it the snow. Ah, you who can see only the soiled snow of the smoky city should have been with us there and watched the great, white, feathery flakes come drifting down and bury the earth in their samite. We loved the winter, Wisdom and I, for it drew us nearer together. Shut in as we were, "the world forgetting and by the world forgot," we grew to know each other better. Grew to see qualities in each other that we did not dream existed.

I was hard put that winter for labor to perform. The depth of snow prevented my working in the clearing, and I faced months of idleness. Then another inspiration came. The lake was filled with fish — great trout and smaller white fish. The few settlers caught enough for their own use, but never supposed that they might have a market value. I communicated with dealers in the city and found that I could dispose of all I could secure. My work for the winter was cut out. The only method of capturing the fish was by hook and line. An opening in the ice above a shallow spot furnished the most favorable fishing ground. I constructed a small house on runners, equipped it with a stove, rigged up my tackle, and went to work. The white fish traveled in great schools and often when the day was done I had over a hundred pounds ready to place upon my hand sled and drag home. It was not pleasant work, especially the cleaning, but when necessity drives man may do many things unpleasant.

The second year the berry bushes began to bring returns, and the third year we gathered a small quantity of fruit from the orchard trees. I had a great deal to learn about horticulture — have yet, for that matter. I allowed my trees to grow too tall and a high wind in the late fall of the fourth year leveled a number of them to the ground. I reset them and next spring removed their tops and the points of the larger limbs. While the trees were growing and before they had sufficient spread of limbs to obscure the ground we used the space between the rows for vegetables, potatoes principally.

Of course we tried poultry. Who does not? For a number of years it was not a success. The fowls throve amazingly, but feed was an item. We raised no wheat of course, and that brought in was quite expensive. The eggs brought a good price, but it only required a little calculation to ascertain that each egg cost us more than it brought even at the highest market. Sadly we consigned our hens to the pot and did not attempt poultry raising again until I had acquired another ten acres of land on which to raise feed for them.

At the close of the sixth year our bank account, kept by Wisdom in a baking-powder can, had increased to such an alarming extent that we decided to build a more commodious residence. After a deal of planning we decided upon four rooms and a pantry. Another sawmill had moved in by this time and we were able to procure lumber, not only nearer home, but planed as well. The first house had been built of rough boards entirely. A carpenter was employed to aid in the work. Wisdom insisted that while my ideas upon many things could not be excelled, when it came to sawing a board they were decidedly on the bias.

The old house was made to do duty as a wood house and we moved into the new dwelling, with real wall paper on its walls.

Thus we lived. While we were not wealthy, nor ever would be, we were happy and contented, greater riches than heaps of gold or jewels fine. We owed not any man, nor were we longing to attain the topmost round of ambition's ladder.

All in all, there are meaner ways of spending life than upon a frontier ranch in the wilderness.

The present house in the midst of blossoming fruit trees. "All in all, there are meaner ways of spending life than upon a frontier ranch in the wilderness"

Sloping, velvety lawns, magnificent trees, extensive gardens, and a house of architectual beauty are the important features of the Sleepy Hollow Country Club. Ultimately the membership will be one thousand, six hundred now being enrolled, including a dozen lady members

THE MOST ELABORATE COUNTRY CLUB IN AMERICA

By PHIL M. RILEY

Photographs by Louis H. Dreyer

AMONG the several features for which New York State may justly claim distinction may be mentioned the Sleepy Hollow Country Club, organized early this spring by wealthy New York men. Its home is "Woodlea," the magnificent estate formerly owned by Mrs. Elliot F. Shepard, situated thirty miles north of New York at Scarborough-on-the-Hudson.

Club and home features are here combined more intimately than has ever been done before. In fact, the atmosphere of the place approaches that of a house party, except that members pay for their entertainment. Only by making use of a residence could this result have been achieved, yet no club could possibly afford to make the outlay necessary to develop an estate and building such as "Woodlea," which is valued at over $1,500,000.

The house itself ranks among the foremost efforts of McKim, Mead & White, the well-known architects. It is an imposing three-story structure of brick with stone trim in the style of the Italian Renaissance, and stands on rising ground where it commands a sweeping view up and down the Hudson nearby. Undoubtedly the two most striking architectural features are the magnificent porte-cochere which is used as the main entrance, and a superb terrace adjoining the opposite side of the building and overlooking the gardens.

No specially-designed house could be better suited for use as a country club. Altogether there are seventy-four rooms with all necessary and most up-to-date appointments. Across the front of the house stretch the main salon, the library, and dining-room. All are interconnecting and command a delightful view of the Hudson. Two hundred persons can be seated at small tables in the dining-room, and the kitchen and pantry arrangements are ample to serve that number.

On the second and third floors there are eighteen large double bedrooms with baths attached, and twenty-one smaller bedrooms especially suitable for bachelors stopping at the clubhouse for a night at a time.

As a club, the Shepard house remains practically the same as when a home. The lease includes all the tasteful furniture, the beautiful tapestries, rugs, and many other art treasures.

This rare architectural gem stands in a wonderful green setting of thirty acres, made up of sloping velvety lawns; magnificent trees and attractive shrubs; an Italian garden of unusual extent and beauty with its fountain basin, formal flower beds and vine-clad pergola; and a charming little lake tucked away among the rolling hills. To furnish the necessary element of outdoor recreation, several tennis courts have been prepared and an eighteen-hole golf course is about to be laid out, for which the country is well suited.

The whole aspect of the place is that of one of the great ancestral domains of England. At the entrance there are two picturesque lodges and gateways from which a broad avenue leads to the house, while excellent roads and shady footpaths thread the grounds in several directions, the spacious stables being one of the objective points. Here are provided accommodations for two hundred automobiles. These buildings are fireproof and have been furnished with every modern convenience essential to a well-equipped garage.

With its palatial building, magnificent location and charming grounds, its outdoor recreations and the beauty of the motor trip from New York to it, "Woodlea" may rightly claim the honor of constituting the most remarkable and elaborate country club estate in America, if not in the world.

The house itself is an imposing three-story structure of brick with stone trim in the style of the Italian Renaissance

A superb terrace on one side of the house overlooks the Italian garden with its fountain basin, formal flower beds, and pergola

FRAMING GARDEN PICTURES

This lower terrace of Mr. Dudley Pickman's garden at Beverly Cove, Mass., is an example of framing a garden corner with a luxurious cloak of green

Distant vistas, such as this, are charmingly framed and set off from their surroundings by an arch of climbing roses, beautiful though not in bloom

Here the masses of green on every hand serve to draw attention to the real picture which lies about the picturesque little log pergola

The idea of this vista from the house to the greenhouses is much like that above except that the pergola which frames it is covered with clematis

THE NEW SPORT OF FLYING

CONDUCTED BY PHILIP WAKEMAN WILCOX

HOW I WON THE BARON DE FOREST PRIZE

MY FIRST experience as an aviator took place one day during the latter part of October, 1910. To me this was a most eventful day, because on that morning, without any preliminary practice, I secured my brevet, and in the evening of the same day took up a passenger. This occurred on a Monday, and on the following Saturday I attempted to win the English Michelin cup, offered for the longest flight in England during the year of 1910. Up to that time the record was held by Mr. Cody, who had flown 94 miles, but I broke this record by a flight of three hours and twelve minutes, in which I covered a distance of 107¾ miles.

I then determined to attempt to win the Baron De Forest prize of £4000, which was offered to the English aviator who should fly for the longest distance from England in an English-built machine during the year 1910. The distance was to be taken between the starting-point and the landing-point, and included in this must be a flight across the English Channel. There were a number of aviators, including Messrs. Claude Grahame-White, Griswold, and Robert Lorraine, who had already pitched their tents at Dover in preparation for attempting to win this prize, but as I have always been somewhat of a mechanic, and realizing the importance of having everything shipshape before starting, I could not reconcile myself to working in a tent. Instead I located my machine at Eastchurch, about thirty miles away, where I could get a proper hangar and good working facilities. I also had another reason for locating at Eastchurch. The aviators at Dover argued that under at all favorable conditions they could at least cover the twenty miles required to cross the channel before anything happened to their machines, so that they would not be likely to fall into the water; but on the other hand it seemed to me that in the thirty-mile trip to Dover from Eastchurch I would have ample time to test out my motor and machine, so that I would really have a better chance to cross than the other men. If anything should be radically wrong with the motor or aeroplane I would surely discover it before the thirty miles had been covered.

About this time we were having very strong southeast winds, which were directly opposite to my proposed route, so for a fortnight I had to content myself with only a ten-minute flight. On December 15th the winds were so strong that the tents of the aviators at Dover were all blown down, completely wrecking Lorraine's and Griswold's machines and damaging Graham-White's. But on December 18th there was a fifteen-mile breeze from the northwest and I decided to make my attempt then.

At 8:20 A. M. everything was in readiness, my tanks filled for a seven-hour journey, and the instruments, including the barograph, compass, and inclination meter, adjusted. I had some difficulty in rising, owing to the great amount of weight I was carrying and the fact that the wind was at my back, so in order to reach a high enough altitude to clear the hills near Eastchurch I was forced to turn my machine into the wind. As I rose the wind increased steadily until, at an altitude of 500 feet, I estimated that it was blowing with a velocity of about thirty-five miles per hour.

Before starting I had calculated the approximate time required to arrive at the various stages of my journey, and was therefore very much surprised at the end of the first half hour to find myself flying over Dover.

Here awaited me one of the most beautiful sights that I have ever witnessed. I was at an elevation of about 1200 feet at the time, and far below me spread out were the high chalk cliffs of Dover, the wonderful harbor, dotted here and there with sailing vessels and huge warships, and the spider-web streets of the city tself.

The day was a trifle cloudy, so that it was impossible to see more than about three miles ahead while crossing the Channel. I had figured that it would require about thirty-five minutes to make the flight across, but it was only eighteen minutes before I discovered the white line of the waves breaking on the shore of France, just west of Gris Ney. This will give you an idea of the strength of the wind, driving me on so fast that I was covering the country at a speed in excess of sixty miles an hour.

From the beginning I had experienced difficulty with my compass, which seemed to show a much greater interest in the magneto of my engine than in the North Pole, so I found it necessary to find some other means of determining my course. Until I had passed Dover the sun made an excellent guide, but when suddenly it became obscured by clouds I decided to fly in the direction of the wind. As the wind veered slightly while I was flying my ultimate course was somewhat crescent-shaped and consequently I lost considerable distance thereby.

This change in the direction also led me out of my predetermined course, so that instead of flying over flat ground I went over the Ardennes district, which is quite hilly, and this added to the difficulty of flying owing to the uneven winds. It became exceedingly difficult at times to manage my machine. This lasted for about an hour, continually getting worse; in fact, it was so bad that while flying over a small village at an elevation of 700 feet my machine suddenly turned over sidewise and dropped like lead for about 200 feet before I was able to regain my equilibrium. I then decided to wait a little longer, and if the air currents did not improve, to alight. At the end of fifteen minutes it became so difficult to manage the machine that I thought it best to land at the next town. I soon spied a village, and picking out a grass meadow which appeared to offer a good landing-place, I made for it. As the wind was blowing very hard, I had to turn the machine facing into it, and as I got nearer I could see that the machine was unable to make any headway against it and was apparently moving backward. However, as I came down the wind became less and I landed

(*Continued on page 50*)

Tom Sopwith, the young English aviator who is now in this country working on the problems of passenger carrying

Sopwith in his Howard Wright machine returning to Nassau Boulevard after his successful flight over the *Olympic* in New York harbor

CONDUCTED BY RYLAND P. MADISON

TWO-CYCLE AND FOUR-CYCLE MOTORS

BECAUSE two-cycle motors have been used extensively in motor boats for many years and are simple and reliable in operation, many persons are puzzled to understand why this type of motor is not more extensively used in automobiles instead of the almost universal four-cycle motor. And it is not uncommon to hear men say that while they know the theory of the four-cycle engine, they do not have an equally clear understanding of the principles of operation of the two-cycle motor.

In order that the difference between the two types may be grasped readily, it is necessary to review briefly the theory of the internal combustion engine. The cylinder may be likened to the barrel of a gun, the piston to the projectile and the charge of gas to the explosive. When the charge is ignited by an electric spark, combustion is practically instantaneous, the enormous heat developed suddenly expands the air contained in the combustion chamber and raises the pressure many fold. This pressure drives the piston toward the open end of the cylinder just as a projectile is driven through the bore of a gun toward the muzzle. But the piston is arrested in its motion when the crank, to which it is secured by a connecting rod, reaches the extreme limit of its movement away from the cylinder. The motion given to the crank shaft by the piston and connecting rod is communicated to the flywheel attached to the crankshaft and is converted into rotary motion. The momentum acquired by the heavy flywheel causes the crankshaft to continue to revolve after the force of the charge has been expended, and after the crank has passed the outward or bottom dead centre it begins its return movement toward the original point, forcing the piston back into the cylinder as the ball or shot in a muzzle-loading musket or shotgun is rammed home with a ramrod.

Because the motion of the piston on the combustion or power stroke is stopped before the piston leaves the open end of the cylinder, the cylinder remains filled with burned gases which must be driven out before a fresh charge is admitted. There are two common ways of accomplishing this. One is to open a valve in the head of the cylinder by mechanical means, as by a camshaft and push rod, and allow the returning piston to push the exhaust gas out. The other is to provide a valveless port in the side of the cylinder which will be uncovered automatically by the piston when nearing the end of the combustion or working stroke, allowing the burned gases to escape through this open port until the pressure in the cylinder is reduced nearly to atmospheric. The first method belongs to the four-cycle motor and the other to the two-cycle motor. It will be noted that the same stage of readiness for a fresh charge has been reached in two strokes — out and in, or power and idle — by the former and in one stroke by the latter.

The next step is to admit the fresh charge. This is usually a gaseous mixture of gasoline vapor and air, commingled in the carbureter and passages before it is delivered to the cylinder. In the four-cycle engine it is introduced at the head of the cylinder through an inlet valve, which is preferably opened mechanically but may be opened automatically against a spring by suction. The suction is created by the piston, which, after reaching the end of its return or exhaust stroke, begins a second outward or suction stroke under the momentum of the flywheel, leaving a partial vacuum in the cylinder behind it. Into this vacuum rushes the fresh gas from the carbureter until the piston comes to rest again at the outward dead centre of the crank when the cylinder is fully charged. This is the end of the third stroke.

The charge is not fired at this stage because the piston is already as far out as it can go. Furthermore, the gas is at atmospheric pressure or slightly below it and a small quantity of gas occupies a relatively large space. To get the most effective results of expansion following combustion it is necessary to compress the gas in the cylinder to from 60 to 80 or more pounds per square inch. This is done by the piston on its second return stroke — in the four-cycle motor — the energy stored up in the mass of the flywheel in the form of momentum providing the necessary power. When the piston has finished the compression stroke — which is its fourth — the cycle of operation is complete, the second charge is fired and a new cycle begins.

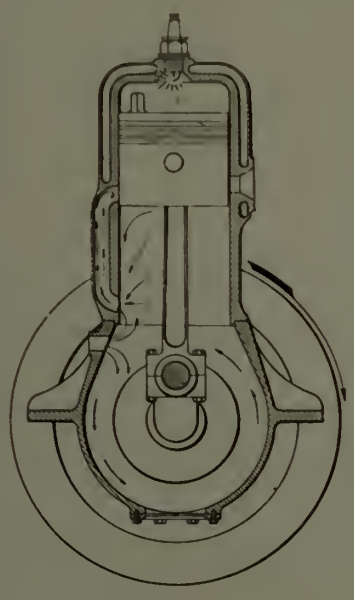


FIG. 1

Explosion in the cylinder and beginning of the working stroke

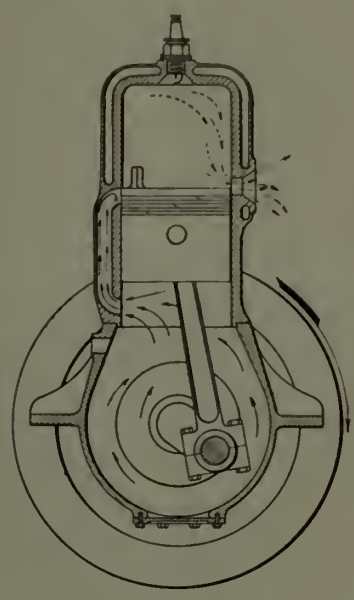


FIG. 2

Exhaust port opens: gas is now compressed in the crankcase

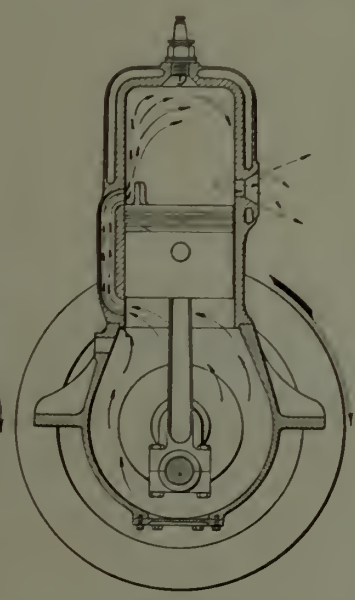


FIG. 3

Inlet port opens: compressed gas now enters cylinder from crankcase

In the two-cycle motor, on the contrary, the fresh charge is admitted at the end of the first or power stroke immediately after the exhaust port has been partially uncovered and while the crank is passing over the outward or bottom dead centre. The cylinder is still filled with burned gases, however, under some pressure and there can be no suction as the piston is already at the outward limit of its stroke. Consequently, it is necessary to force the fresh gas in under pressure. The required pressure is obtained by aspirating the gas from the carbureter into the tightly closed crankcase under suction created by the piston on its return or inward stroke and then allowing the piston to compress the mixture slightly in the crankcase on the next outward stroke. A check valve prevents the gas from escaping from the crankcase through the carbureter. The gas then rushes from the crankcase below the piston through a by-pass and the opened port in the cylinder wall into the cylinder above the piston.

(*Continued on page 50*)

CONDUCTED BY BRADFORD BURNHAM

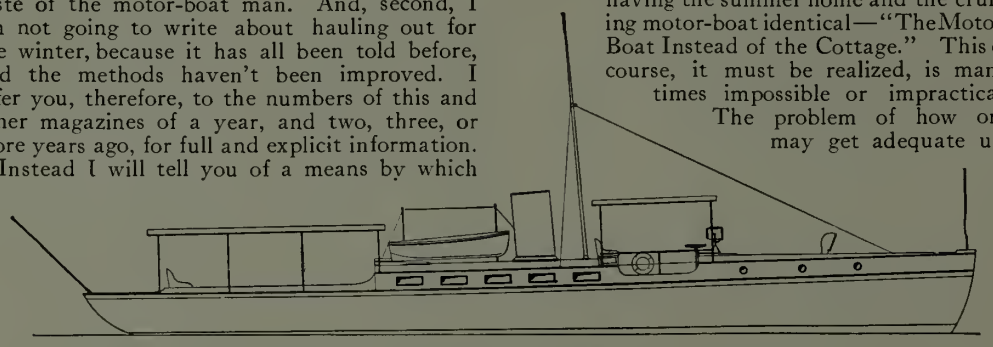
COMMUTING BY MOTOR-BOAT

WHEN a fellow has been enjoying a mixture of tobacco and warm starlight, digested while in a near-horizontal position upon the cockpit cushions of a thirty-five footer, swinging gently at anchor this evening in Newport's famous harbor, he doesn't feel exactly like going into his cabin, lighting the swinging lamps, and turning to on an article about laying up boats for the winter. And he's not going to, either; for just two reasons. First, contrary to general custom, October is not the month for laying up, unless one is broke or tired of motor-boating. The motor-boat season, for the enthusiast, can be made pretty nearly as long as the automobile roadster's, and without undue discomfort. October invariably contains some of the finest motor-boating days of the whole year — days when the sea is as calm, and as blue, almost, as in mid-ocean — and crisp, brief evenings that make one glad to be alive, when one may turn in early in a snug, well ventilated cabin which may be variously heated simply and inexpensively according to the genius and taste of the motor-boat man. And, second, I am not going to write about hauling out for the winter, because it has all been told before, and the methods haven't been improved. I refer you, therefore, to the numbers of this and other magazines of a year, and two, three, or more years ago, for full and explicit information.

Instead I will tell you of a means by which the average business man, the man who does not have a perennial vacation, the man who cannot take his boat South for the winter, may yet prolong his season's use of his boat, and how he may make the most of it while tied by necessity to his desk the greater part of each day.

Commuting by motor-boat is really not so fanciful as it sounds. Thousands of people of all classes of humanity and of all varieties of vocation habitually make use of their boats in this way. A doctor I know, half of whose practice is in a neighboring town to the one in which he lives, had a boat built for him expressly that he might use it daily to travel back and forth between the two towns. Another man saved a mile walk and a long trolley ride by using a motor-boat between his cottage and his business. His mooring was within a pebble toss of his piazza and he landed in town at the very back door of his store. He was independent of schedules, and free from crowds.

In New York most business men are necessarily forced to keep their boats a long distance from their place of business, but they can have them at the very door of their summer abiding-place. In April we discussed some of the advantages of having the summer home and the cruising motor-boat identical — "The Motor-Boat Instead of the Cottage." This of course, it must be realized, is many times impossible or impractical. The problem of how one may get adequate use of his boat at other times than week-ends becomes a serious one. An early start for business, followed by a late return in the evening and a later dinner find one too tired for more than an occasional short run.



Side elevation of a model power launch designed for ferry purposes

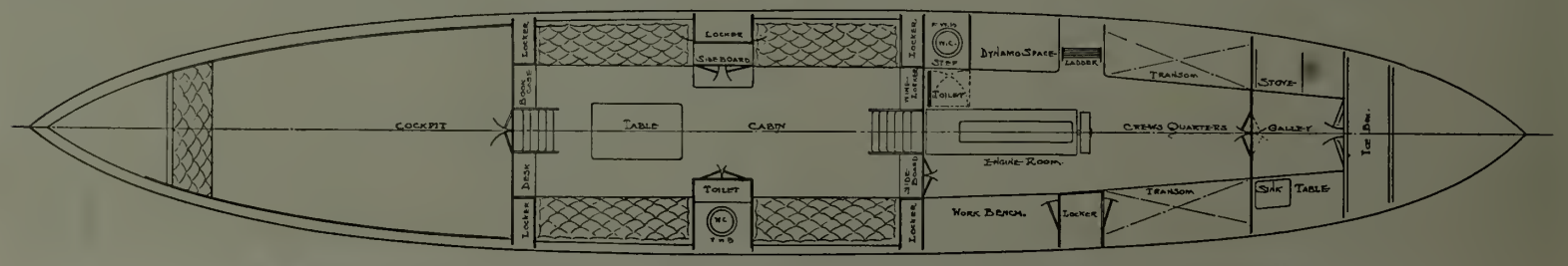
But why not have breakfast just a tiny bit earlier, then get aboard your boat at Stamford, at Port Washington, at Tarrytown, or at Sheepshead Bay and have a refreshing ride to Manhattan before the day's work begins, with a restful return run after its close? The same suggestion holds good for hundreds of other ports; as for instance, to Boston from Winthrop or Salem; to Philadelphia from Beverly or Tacony; to San Francisco from Sausalito.

A ferry motor-boat of approved type. Mr. Insley Blair's 80-footer is one of the handsomest examples of this type in New York waters

So popular has this use of the motor-boat become that the designers are frequently called upon for boats to be built expressly with an eye to ferry service. There are three special requisites — a fair amount of speed, perfect reliability, and a roomy and at all times dry interior. Obviously a ferry launch with a seven-miles-per-hour speed would not be of much service to a Stamford man. Neither would it be pleasant to be stalled off Throg's Neck when one has an important engagement down-town. Still again, as business and cruising attire are far from identical, a good cabin should be provided for wet days or sudden showers. This cabin should be light, airy, and roomy. There should be accommodations for meals and, without sacrificing space or jeopardizing airiness, for sleeping as well, that the boat may also be suitable for more extended cruising.

The plans shown on this page are of a boat which meets to a remarkable degree all these requirements. She may be powered to suit the owner's wishes but the proper power should provide easily a speed of fourteen or more miles per hour. Upon her power depends somewhat,

(*Continued on page 48*)



Deck plan of the launch. It is 66 feet long and should cost in the neighborhood of $15,000. L. Kromholz, designer

GARDEN & GROUNDS

CONDUCTED BY THOMAS McADAM

LEAF-MOLD AND HOW TO MAKE IT

LEAF-MOLD is a valuable and inexpensive asset which the amateur gardener is apt to pass by on the other side. The decaying leaves, sodden by rain and snow and hardly distinguishable from the forest floor, are rich in humus (which is, being interpreted, vegetable or animal matter in such a state of decay that it is rich and ripe for plant food). In the woods, in the sheltered hollows, leaf-mold or "woods-earth" as it is sometimes called, may be collected.

It may also be made at home after this fashion — and is quite as good as, if not better than, the original. In the autumn, dig a pit some three feet deep, and as long and as broad as one pleases. Into this pit throw the fallen leaves and trample them down. Throw in several pails of water. Follow this by another layer of leaves well trampled down and that by another watering. Go on in this fashion until the pit is full or the leaves or the gardener exhausted.

From time to time, while the leaf-mold is "cooking" it should have pails of water bestowed on it. The leaves should not be allowed to become dry. In about a year, this confection will be ready for use.

Lilies especially relish leaf-mold — so do all plants which dislike barn manure. Azaleas, rhododendrons, and other broad-leaved evergreens are fond of it. For mulching, for potting, it is very valuable. Trees can be grown in a soil of pure sand if it is sufficiently enriched by leaf-mold; and as a piece of economy it is an infinitely better disposal of the dead leaves than the usual custom of burning them.

FRANCES DUNCAN.

A SCHEME

LAST May I was struck by the fact that about one half of every vegetable garden I knew of seemed to waste about two months every year, from March 15th to May 15th, or from the time when it is safe to plow the ground until the time when it is safe to set out tomato plants.

But why is not this a practical scheme to improve the soil and make the garden look better all that time? Spread fresh manure over half the garden every autumn and dig it in. On March 15th, or as soon as the ground can be safely worked, broadcast Canada field peas and rake them in, or better, drill and cover them with a hoe. On May 15th, or whenever the danger of frost is past, scatter lime over the pea plants and dig them in, so that the soil will get the benefit of the free nitrogen the pea plants have accumulated. There is a new preparation of nitrogen-gathering germs which, they say, will make peas start growing faster and develop more quickly.

I should think this plan might work nicely in small gardens, especially in communities where it is impossible to get well decomposed manure at a reasonable price. Will some one please try it and give us the results?

OCTOBER'S FLEETING OPPORTUNITIES

YOU will probably lose a year in the development of your home grounds unless you embrace some or all of October's seven greatest opportunities.

First, to have flowers outdoors next spring you must plant tulips, daffodils, crocuses, and other bulbs now.

Second, to have flowers indoors this winter, you should get a lot of bulbs and plant them.

Third, to have some of the loveliest summer flowers you must order lilies now. Fall is better than spring.

(In the three cases above mentioned you will surely lose a year if you fail to act now. In the four following ones you are in danger of losing a year if you put off planting until spring. For in the spring rush many important things are forgotten, and plants are often set so late that they die.)

Fourth, try to save a year on trees by planting deciduous kinds for shade and beauty.

Fifth, try to save a year on fruits by planting the hardy kinds now, such as pears, apples, grapes.

Sixth, try to save a year on shrubs, except roses and a few others concerning which your nursery man will warn you.

Seventh, try to save a year on all permanent, or woody, climbers or creepers for porch, summer-house, walls, banks, and bare ground.

PLANT LILIES IN FALL — NOT SPRING

THE best time to plant lilies is fall — not spring. If you wait till spring the bulbs may not flower next year. They are often weakened so much by being stored all winter that they lie dormant the first season or only make a feeble growth.

What is the best lily for the far North? A friend in Vermont writes: "No lily in the world will grow as far north as *Lilium Davuricum*. It will soon increase and form big clumps like the tiger lily." Professor Waugh gives *L. Davuricum* as a synonym of *L. elegans*, a red lily of June which we have called the Japanese erect lily. American grown bulbs cost only $1.25 a dozen.

Why not naturalize some crocuses in the long grass, or plant clumps in your shrubbery?

Japanese erect lily (*Lilium elegans*). It is rich in reds, orange, and yellows. *L. Davuricum* is a variety of it

If you want tulips next spring you must plant them now. Keizerkroon, red, and yellow

GARDENING UNDER GLASS

GREENHOUSES COLDFRAMES HOTBEDS HOUSE PLANTS

CONDUCTED BY HENRY MAXWELL

THE COAL-SAVING COOLHOUSE

MANY people who can really afford a greenhouse are frightened away by the idea of great coal bills, and a temperature too hot and moist for comfort.

Why not consider a coolhouse? It need not cost as much as an automobile, either at first or later, and there is a portable kind which can be bought for the price of a piano — say $250.

A coolhouse is one that requires a maximum of 50 degrees F. on winter nights, and the mercury can go as low as 42 degrees without damaging most of the plants. Such a housc costs less to maintain becausc it needs less coal, and it may be a comfortable living-room where one may read or work for hours at a time or enjoy a sunbath amid the flowers.

What can you grow in a coolhouse? Here are a few samples: azaleas, begonias, camellias, carnations, cyclamen, dracænas, lilacs, oranges, phyelocacti, primroses, rhododendrons, streptocarpus. But you can't grow roses and carnations in the same house, nor cattleyas and dendrobiums.

Isn't this worth investigating? H. M.

LADY WASHINGTON GERANIUMS

ONE of the refreshing sights of England's springtime is a pot of the so-called Lady Washington geranium (*Pelargonium domesticum*) flaunting its gay bloom in a flower shop or a railroad booth. Here, on the other hand, this time-honored, and certainly most admirable, pot plant is seen so little that it rarely enters into the talk of the flower-lover. The Lady Washington geranium, in short, is neglected to a degree that ought not to be.

Aside from the fact that the American summer is inimical to the best results, it scarcely seems worth while to advocate this plant for bedding out; the blossoms are too delicate to be thus exposed. It is better to grow it under glass, but a greenhouse by no means is essential. I have never seen finer blooms than were grown in the days of my childhood by a country spinster who had only some sunny sitting-room windows in a house heated solely by stoves. Those pelargoniums — as the very precise grower always called them — were an annual wonder to me and really I think that they did represent the height of amateur perfection. There were, perhaps, ten kinds — one plant of each — and all were made to lead the most regular lives. They bloomed for weeks late in the winter.

After blooming, the plants were watered less and allowed to ripen a bit and then, as soon as the weather permitted, the pots were plunged in a bed of coal ashes placed in the shade of an apple tree. Later the plants were pruned to the point of severity and then repotted in carefully prepared soil and set aside to allow new growth to progress slowly. The plants, of course, were brought into the house in the early autumn, but were kept fairly cool until about the middle of winter, when they were given the sun of the two sitting-room windows. Each plant was trained as a standard — the best form for the home window or greenhouse bench if one is looking for quality rather than quantity of bloom, Generally speaking, I have never come across any improvement on these methods.

The pelargoniums in the accompanying illustration, having been grown for greenhouse display, were allowed to attain to great luxuriance, and in this instance there was no such diminution of quality as would be likely to follow in a dwelling house. The grower's practice is to cut the plants back after blooming, but much less severely than in the case previously mentioned, where little more than a stumpy stick was left. They are put in a cold frame for the summer and every two years new cuttings are made. While they are indoors special care is taken that they are not injured by the ravages of green lice and red spiders. H. S. Adams.

THE SHOWY STREPTOSOLEN

LUCKY California! It can have the gorgeousness of *Streptosolen Jamesoni* out of doors, for it is hardy as far north as San Francisco. Due east of that city this plant is at home only in the greenhouse. For either a large or a small greenhouse it is a most valuable producer of color, coupled with much grace of growth. To get the color at its best, however, it should be massed as in the accompanying picture, where the plants have been given one end of a greenhouse bench, with a few Easter lilies by way of setting off the rich orange of the clusters of streptosolen blossoms. It is an "old favorite," this *Streptosolen Jamesoni*, having been brought out of Colombia in 1847, but, like so many other particularly meritorious plants, has got into the background of popularity.

H. S. Adams.

AN ARTISTIC WINDOW BOX

THE accompanying picture speaks volumes for the taste of the person who made this window box. It fits. Ready-made things rarely do. See the simplicity, and enduring quality of it! There is originality in that ladder, up which the English ivy is climbing. Is not this the arts-and-crafts spirit at its best? And are not built-in things worth all the trouble and expense? We think so.

Streptosolen Jamesoni properly massed on the end of a bench

Three varieties Lady of Washington geranium (*Pelargonium domesticum*) massed on a greenhouse bench. All three are pink varieties with maroon or solferino markings

A simple and artistic indoor window box that really fits

Country Life Abroad

CONDUCTED BY MADISON R. PHILLIPS

[The object of this department is to give a true impression which it is hoped will prove of value to the American who travels abroad. Further information as to where and how to go will be supplied as promptly as possible by the COUNTRY LIFE IN AMERICA *Readers' Service* — THE EDITORS.]

MUSHROOM CULTURE IN FRANCE

THE tourist who for the first time visits the southern and western plains of the suburbs of Paris is sure to be puzzled by certain quadrangular wooden towers which he perceives here and there rising out of the ground, and what still more excites his curiosity are the clouds of smoke that occasionally ascend from these strange structures, which are scattered over waste grounds, cultivated fields, and gardens. They do not, however, serve as housings for the secret prosecution of business of a criminal or questionable nature, but are simply shafts for the ventilation of old quarries that are at present used for the cultivation of those mushrooms that are so highly prized by the gourmets of the old and new worlds. The *Agaricus campestris*, called the field mushroom, the only species that it is possible to domesticate, grows by preference on half decomposed horse-manure. Dr. Repin says, "Its cradle was a melon-bed." But we do not know the name of the bright gardener who took some "spawn" from one of these beds in which mushrooms grow spontaneously, and sowed it in new manure in order to obtain a second crop. There is good reason, however, for the belief that such culture originated in France in the latter half of the eighteenth century, and that at the outset the kitchen-gardeners who engaged in it in the spring and fall considered it as a natural adjunct to their business. Then, a century ago, a horticulturist named Chambray conceived the idea of devoting the abandoned subterranean quarries to their culture, since in them are found the conditions of temperature and humidity favorable to the development of the fungus. He succeeded thus in making a handsome profit, with the consequence that he had many imitators, who have tried to lease all the excavations abandoned by the quarry men, so that the mushroom industry soon became one of the most prosperous of the environs of Paris.

To the south and west of Paris one sees many of these quadrangular structures which stand above the mushroom cellars

At present, the suburban mushroom exploitations are almost exclusively distributed over the left bank of the Seine, in the section comprised between Meudon and Ivry. The most important are situated at Montrouge, Clamart, Vanves, Chatillon, Arcueil, and Sceux, and formerly extended to the Quartier du Val-de-Grace in Paris.

The galleries are excavated in limestone, as at Carriere-Saint-Denis; in gypsum, as at Argenteuil; or in white clay, as at Meudon; and the oldest of them (those from which the architects of the Middle Ages took the stone and plaster that enabled them to erect the public buildings of Paris) form a labyrinth of low and narrow chambers in which the workmen often can scarcely move about without stooping.

But the more modern exploitations, of which the accompanying engraving gives a faithful picture, consist of spacious galleries of which the roof is supported by strong pillars carved out of the rock itself. Here the mushroom cultivator exercises his sombre profession at his ease. A peg-ladder in the interior of the ventilating shaft will allow us to descend into the mysterious cave where here and there sparkle the oil or kerosene lamps that guide the cultivator. Much preliminary work must be done to convert a quarry into a place for mushroom culture. After providing for the aeration of the galleries, a well must be dug from which to obtain the large quantity of water necessary, and after that a supply of horse-manure must be secured, this being the only material favorable to the development of the mushroom.

Horse manure is the only material favorable to mushroom culture. After fermentation outdoors it is made into rounded beds in the cellar

Gathering mushrooms in the abandoned quarries near Paris, which have been so successfully converted into mushroom cellars

Moreover, the quality of the manure plays a leading part in the yield. Preference is given to the manure of heavy Percherons or other draught horses which perform a great amount of muscular labor and are supplied with highly nitrogenized food.

After the material has been selected, the mushroom grower submits it to the following manipulations: It is first arranged in heaps about three feet high called "flows" the bulk of which sometimes reaches 3,500 cubic feet, and should be at the least 750 feet. Then the whole is submitted to the action of the air for three weeks, and is turned over occasionally in order to diminish the intensity of the fermentation. In fact, according to Dr. Repin, manure acquires nutritive properties during the course of fermentation, for it is found that if fresh manure is sterilized and sowed with spores of mushrooms beginning to germinate, the fungus never accomplishes its complete evolution in such a medium. It germinates and sends out filaments, but does not fructify. The manure, in fermenting, becomes filled with microbes, which, according to the observations of various biologists, appear to be useful to mushroom culture only through the products elaborated. Their rôle is confined to favoring the chemical combustion by raising the temperature at the time of establishing the heaps or "flows." However this may be, at the end of a fortnight the manure possesses a special odor somewhat recalling that of the field mushroom itself, and is ready to be lowered to the mushroom galleries. Here the workmen arrange it in beds as regular as possible in the centre of the galleries, the rocky walls of which are supported here and there by piles of rubble to prevent them from falling in. In one of the illustrations workmen are seen in the act of forming rounded beds sixteen inches in width at the base and twenty inches in height, which they carefully align side by side along the galleries, like the furrows in a field. Such dimensions and such arrangement are not arbitrary, but experience has shown that under such conditions the manure becomes vigorous, more productive and less fragile. Growers rarely cultivate a given species for more than two or three years. They prefer to have recourse afterwards to virgin spawn obtained by scientific processes that permit of selecting the mushrooms, or to reproduce the kinds deemed to be the best by direct germination of the spores.

The idea of preparing spawn through the germination of the spores occurred to various botanists a long time ago, but Messrs. Constantin and Matruchot alone succeeded a few years since in obtaining positive results. In order to obtain *Agaricus* spores, they placed a mature mushroom on a sheet of paper and then collected the spores a few days afterward in the form of an impalpable brown powder. In order to cause them to germinate, they had recourse to the media used in bacteriology — moist air, damp sand, or manure, for example. The spores ready for germination become distended in the first place in taking on a light color, and then throw out from one of their poles a very fine tube which enlarges and ramifies in all directions in budding. In this way there is formed a small tuft of mycelium, which, in a favorite medium, manure for example, will extend indefinitely. Dr. Repin applies this process industrially in the following manner: After distributing the manure in strata of equal thickness between superposed steel plates, he submits the whole to a pressure of seven hundred pounds to the square inch. On coming from the press the whole is found to be agglomerated into a plate about half an inch in thickness and almost as hard as wood. He then sows these plates with spores and places them under conditions most favorable for the development of the mycelium, but in such a way as to protect them from elevations of temperature to as great a degree as possible. The vegetation of the spawn is retarded, although its vigor increases when it is introduced into the warmish atmosphere of the mushroom gallery.

The links of the Rome Golf Club are located in very picturesque surroundings near the famous Claudian aqueduct and the tomb of Acilia Maletta

After the plates of manure have become entirely permeated by the mycelium, they are cut by a machine into four-inch square pieces, each of which represents an insertion. The mushroom grower can therefore lay in a supply of the variety that is best adapted to his quarry,

The Blenheim oak in England is said to be the largest and oldest in existence. It is in a thrifty condition and looks good for a century

for this virgin spawn remains free from the diseases which attack mushrooms and particularly that which is called "softening," so dreaded by the Parisian growers, whom it annually costs more than a million francs. The mushrooms attacked by the cryptogram that causes the disease become atrophied and covered with a rosy down, and, at the epoch of their maturity, become deliquescent.

A few statistics will show the importance of this industry. There exist in the department of the Seine about two hundred and fifty mushroom installations owned by eighty individuals, not counting a score of others distributed through the neighboring departments. The number of workmen employed in the industry exceeds one thousand, and the total value of the mushrooms annually produced in the suburbs of Paris amounts to twelve million francs. S. H.

THE BLENHEIM OAK

IN WOODSTOCK PARK, a part of the Blenheim Palace estate, the home of the Duke of Marlborough, stands a magnificent oak tree which is said to be the oldest and largest oak in existence. When I was at Blenheim, twenty-two people stood around its trunk side by side and leaning against its bark. It is the ideal type of an ancient oak, gnarled, with massive limbs, growing low, and covered with thick masses of foliage. The trunk is still sound and shows little of the ravages of time. Here and there are the scars where dead limbs have been cut away, but they were small limbs, and the tree is still sturdy and healthy in spite of its centuries of life. If appearances count for anything it is good for another century. Everything is being done to make this possible; the tree is watched and cared for with the greatest concern, as the ducal gardener is vastly proud of its age and fame. Grace Aspinwall.

OCTOBER NOTES FROM ABROAD

THE English hunting season is now at its height and the gamekeepers are all busy. Fortunate indeed are those Americans who have an opportunity to participate in this joyous autumn sport. Our English contemporary, *Country Life*, issues a yearly directory of hunts which will be of value to those who wish detailed information.

ONE of the greatest industries of France is the making of wine, both for a large home use and for export. Vineyards seem to be everywhere, and in autumn there is grape picking on every hand. Many different sorts of wine are made in France, but it is principally champagne which is exported to America. This evanescent, sparkling wine is made within the limits of the old province of Champagne in northwestern France, chiefly in the region about Rheims, Epernay, Avieze, Ay, and Pierry in the Department of Morne. Each manufacturer makes a blend according to his own system and so no two are quite alike. The effervescence is artificially produced, and is in the nature of an incomplete fermentation. The greater or less sweetness of the wine is produced by the addition of a liquor consisting of sugar candy dissolved in old wine. The sweeter wines are generally the more effervescent.

THE traveler who plays golf at Rome will find himself situated in very unusual and picturesque surroundings. The clubhouse of the Rome Golf Club at Acqua Santa is itself a quaint old structure, but of far greater interest are the ancient ruins scattered about. Chief among these are the remains of the famous Claudian aqueduct near the seventh green and the old Roman tomb of Cecilia Maletta on the Appian Way.

MUCH to the delight of tourists and many others, the French Parliament has adopted Greenwich mean time as the standard time throughout France. Travelers will no longer be obliged to set their watches ahead ten minutes when crossing from England to France as hitherto, and time-tables will seem much more simple to the foreigner.

AN INTERNATIONAL show of airships is to be held in Berlin in December immediately after the motor-car show.

WHY MAN OF TODAY IS ONLY 50 PER CENT EFFICIENT

By WALTER GRIFFITH

IF one were to form an opinion from the number of helpful, inspiring and informing articles one sees in the public press and magazines, the purpose of which is to increase our efficiency, he must believe that the entire American Nation is striving for such an end —

And this is so.

The American Man because the race is swifter every day: competition is keener and the stronger the man the greater his capacity to win. The stronger the man the stronger his will and brain, and the greater his ability to match wits and win. The greater his confidence in himself, the greater the confidence of other people in him: the keener his wit and the clearer his brain.

The American Woman because she must be competent to rear and manage the family and home, and take all the thought and responsibility from the shoulders of the man, whose present-day business burdens are all that he can carry.

Now what are we doing to secure that efficiency? Much mentally, some of us much physically, but what is the trouble?

We are not really efficient more than half the time. Half the time blue and worried — all the time nervous — some of the time really incapacitated by illness.

There is a reason for this — a practical reason, one that has been known to physicians for quite a period, and will be known to the entire World ere long.

That reason is that the human system does not, and will not, rid itself of all the waste which it accumulates under our present mode of living. No matter how regular we are, the food we eat and the sedentary lives we live (even though we do get some exercise) make it impossible; just as impossible as it is for the grate of a stove to rid itself of clinkers.

And the waste does to us exactly what the clinkers do to the stove; make the fire burn low and inefficiently until enough clinkers have accumulated, and then prevent its burning at all.

It has been our habit, after this waste has reduced our efficiency about 75 per cent., to drug ourselves; or after we have become 100 per cent. inefficient through illness, to still further attempt to rid ourselves of it in the same way — by drugging.

If a clock is not cleaned once in a while it clogs up and stops; the same way with an engine because of the residue which it, itself accumulates. To clean the clock, you would not put acid on the parts, though you could probably find one that would do the work, nor to clean the engine would you force a cleaner through it that would injure its parts; yet that is the process you employ when you drug the system to rid it of waste.

You would clean your clock and engine with a harmless cleanser that Nature has provided, and you can do exactly the same for yourself as I will demonstrate before I conclude.

The reason that a physician's first step in illness is to purge the system is that no medicine can take effect nor can the system work properly while the colon (large intestine) is clogged up. If the colon were not clogged up the chances are 10 to 1 that you would not have been ill at all.

It may take some time for the clogging process to reach the stage where it produces real illness, but, no matter how long it takes, while it is going on the functions are not working so as to keep us up to "concert pitch." Our livers are sluggish, we are dull and heavy — slight or severe headaches come on — our sleep does not rest us — in short, we are about 50 per cent. efficient.

And if this condition progresses to where real illness develops, it is impossible to tell what form that illness will take, because —

The blood is constantly circulating through the colon, and taking up by absorption the poisons in the waste which it contains, it distributes them throughout the system and weakens it so that we are subject to whatever disease is most prevalent.

The nature of the illness depends on our own little weaknesses and what we are the least able to resist.

These facts are all scientifically correct in every particular, and it has often surprised me that they are not more generally known and appreciated. All we have to do is to consider the treatment that we have received in illness to realize fully how it developed and the methods used to remove it.

So you see that not only is accumulated waste directly and constantly pulling down our efficiency by making out blood poor and our intellects dull — our spirits low and our ambitions weak, but it is responsible through its weakening and infecting processes for a list of illnesses that if catalogued here would seem almost unbelievable.

It is the direct and immediate cause of that very expensive and dangerous complaint — appendicitis.

If we can successfully eliminate the waste all our functions work properly and in accord — there are no poisons being taken up by the blood, so it is pure and imparts strength to every part of the body instead of weakness — there is nothing to clog up the system and make us bilious, dull and nervously fearful.

With everything working in perfect accord and without obstruction, our brains are clear, our entire physical being is competent to respond quickly to every requirement, and we are 100 per cent., efficient.

Now this waste that I speak of cannot be thoroughly removed by drugs, but even if it could the effect of these drugs on the functions is very unnatural, and if continued becomes a periodical necessity.

Note the opinions on drugging of two most eminent physicians:

Prof. Alonzo Clark, M.D., of the New York College of Physicians and Surgeons, says: "All of our curative agents are poisons, and, as a consequence, every dose diminishes the patient's vitality."

Prof. Joseph M. Smith, M.D., of the same school says: "All medicines which enter the circulation poison the blood in the same manner as do the poisons that produce disease."

Now, the internal organism can be kept as sweet and pure and clean as the external and by the same natural, sane method — bathing. By the proper system warm water can be introduced so that the colon is perfectly cleansed and kept pure.

There is no violence in this process — it seems to be just as normal and natural as washing one's hands.

Physicians are taking it up more widely and generally every day, and it seems as though everyone should be informed thoroughly on a practice which, though so rational and simple, is revolutionary in its accomplishments.

This is rather a delicate subject to write of exhaustively in the public press, but Chas. A. Tyrrell, M.D., has prepared an interesting treatise on "Why Man of Today is only 50 Per Cent. Efficient" which treats the subject very exhaustively and which he will send without cost to anyone addressing him at 134 West 65th Street, New York, and mentioning that they have read this article in COUNTRY LIFE IN AMERICA.

Personally, I am enthusiastic on Internal Bathing because I have seen what it has done in illness as well as in health, and I believe that every person who wishes to keep in as near a perfect condition as is humanly possible should at least be informed on this subject; he will also probably learn something about himself which he has never known through reading the little book to which I refer.

Stoddard-Dayton 1912 Line

ECONOMY — UNITED STATES MOTOR CO — UTILITY

SUCCESSFUL motor-car manufacture demands continual improvement of proven products, and either increased values or lower prices year by year.

Enhanced values or lower prices are possible only by economies effected by better manufacturing and selling methods and facilities, and by quantity production.

To this end the United States Motor Company was formed by successful makers.

With an already wonderful car, with a wonderful record and reputation, the Stoddard-Dayton, since joining the United States Motor Company, has been able in two years to effect economies and improve its cars until in 1912 each dollar buys half as much again as was possible two years ago.

We gratefully recognize the satisfaction our cars have given in the past eight years, and are proud of the pride of ownership expressed by Stoddard-Dayton owners.

But we are confident they will regard 1912 Stoddard-Daytons as the most extraordinary values ever offered in QUALITY CARS.

The lines of all the body designs tend toward extreme simplicity. The effect is striking. The use of running-board tool-boxes does away with all unsightly battery boxes, gas tanks, etc., that mar the appearance of the usual car. Neatness and simplicity are carried to a still further impressive state by removing from the dash everything except the gasolene and oil pressure gauges and the small cover of the coil.

The forward part of the bodies have been widened considerably, giving ample space for the working of control and brake levers inside the body. The front seats of the "Knight," "Special" and "Saybrook" Touring cars and Torpedo models are adjustable forward and back, to accommodate drivers of various leg-lengths who have found no car that exactly fitted them.

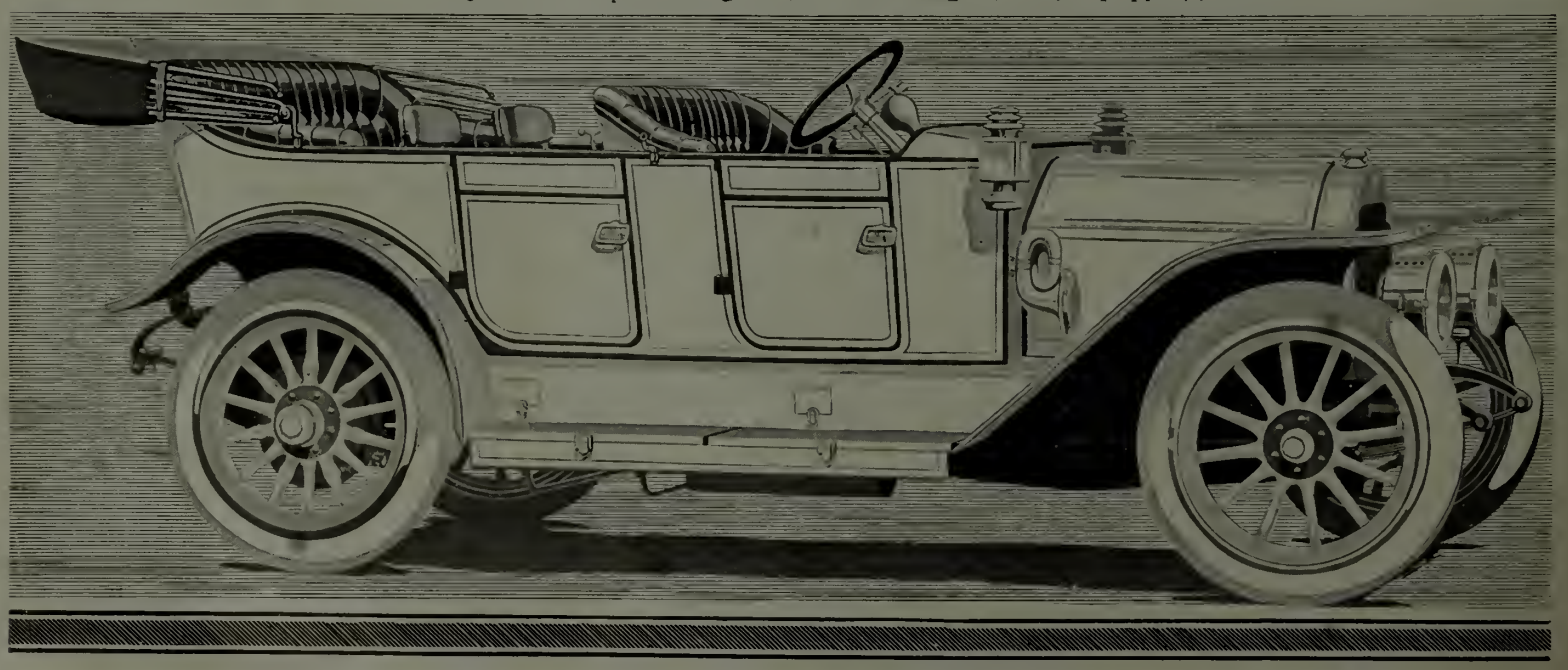
Stoddard-Dayton "Savoy" 28 hp. $1450 Five-passenger Touring Car; four-cylinder, 4 x 4½; wheel-base, 112 inches. Made also with four-passenger Touring or two-passenger Roadster bodies or with two styles of Commercial Wagon bodies.

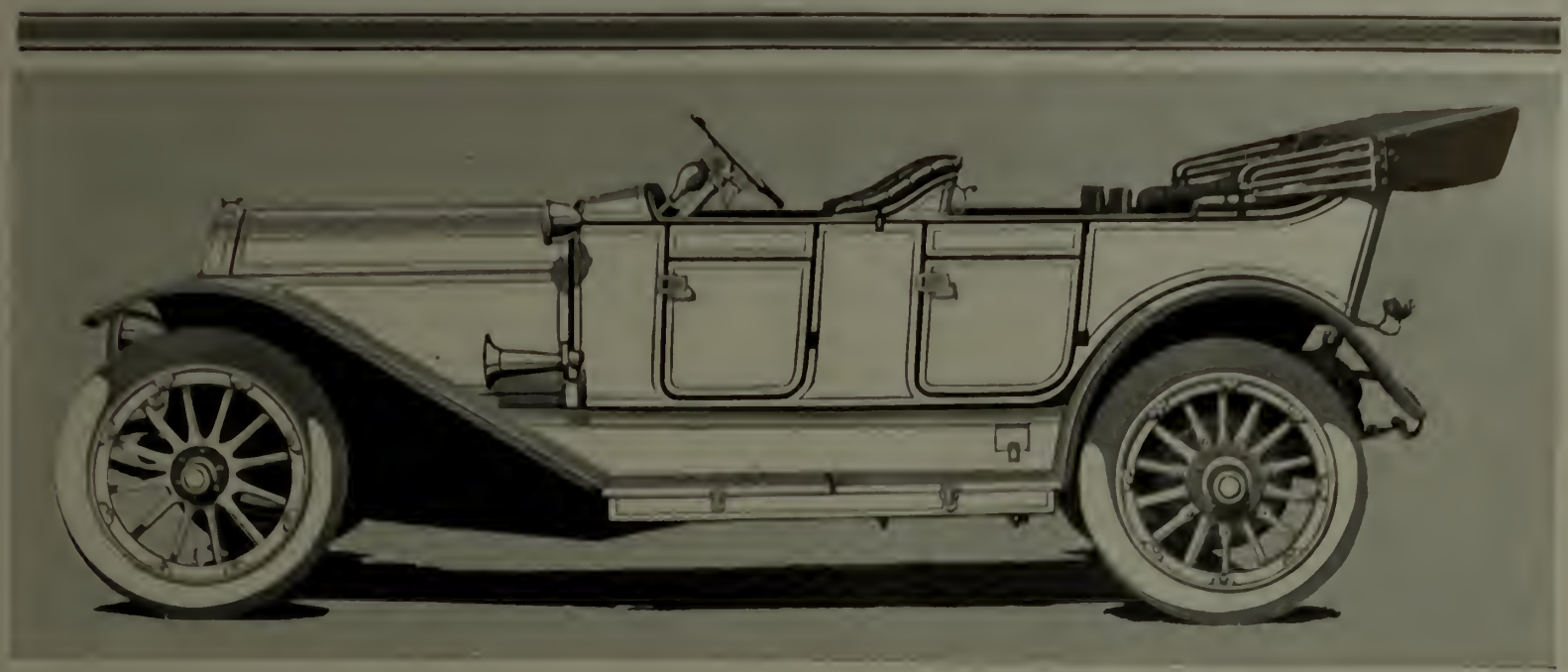
Stoddard-Dayton "Stratford" 38 hp. $1850 Five-passenger Touring Car; four-cylinder, 4¼ x 5½; wheel-base, 116 inches. Made also with seven-passenger Limousine or Landaulet bodies or with three passenger Coupe or two-passenger Semi-Torpedo bodies.

Stoddard-Dayton "Saybrook" 48 hp. $2800 Seven-passenger Touring Car; four-cylinder, 4¾ x 5; wheel-base, 122½ inches. Also made with seven-passenger Limousine, four-passenger Torpedo or two-passenger Roadster bodies.

Stoddard-Dayton "Special" 58 hp. $3500 Seven-passenger Touring Car; four-cylinder, 5 x 5½; wheel-base, 130 inches. Made also with seven-passenger Limousine and six-passenger Torpedo bodies, or on a 122½-inch wheel-base with four-passenger Torpedo or two-passenger Roadster bodies. (All prices are f.o.b. Dayton.)

"Saybrook" 48-hp. Touring Car, Seven Passengers, Fully Equipped, $2800.





And a Six-Cylinder "Stoddard-Dayton-Knight," 70 hp. $5000

Combining the Six-Cylinder and Silent Knight principles for the first time in any car made in America —and two important widely-commended innovations—**left-hand drive and centre control.** Seven-passenger fore-door Touring Car with wheel-base 133 inches; six-cylinder, 4½ x 5½; 36 x 5-inch tires; Q. D. demountable rims; Mohair top and boot; windshield, rain vision; tire holders; foot-throttle; robe-rail; foot-rest; seat-covers; trunk rack; Hartford shock absorbers; speedometer; big electric horn; electric-lighting outfit (including dynamo, storage battery and electric lamps); running-board tool-boxes; bulb horn; jack; all tools, **$5000.** Furnished also with seven-passenger Limousine, four-passenger Torpedo and two-passenger Roadster bodies. (All prices are f.o.b. Dayton.)

THE superiority of the "Silent Knight" motor lies in the substitution of new means for governing the admission of fresh gas to the cylinders, and its exhaustion after explosion.

What the Difference Is

In the usual poppet valve motor the gas is admitted and emitted through valves placed either in the head or sides of the cylinders. These valves set in metal seats, and are opened by rods driven from an independent shaft fitted with cams, and are closed by coil springs. These cams are governed by gears. The disarrangement of gears or rods, the wearing of valve seats or valves result in loss of power.

In the "Knight" motor there are only the silent, tremorless, sliding sleeves working away perfectly without care or attention. They make no noise, for they strike nothing. They cause no vibration. They merely slide up and down in perfect lubrication, and silently. The timing is positive and mechanical, and cannot be deranged by neglect or wear. In fact, it can never become deranged.

What this Sleeve Action is Like

Take in your hands two smooth pieces of metal, oil them, then slide them one upon the other—this is the simple, noiseless, vibrationless, silent action of the sleeves in the "Stoddard-Dayton-Knight." Fitting the engine cylinder closely, one within the other, with a film of oil between, are these two sliding cylinders, and within the inner one slides the piston. Each sleeve has two slots in it, one on each side. When slot Y in the outer sleeve comes opposite slot X in the inner sleeve, and opposite the intake port C, a charge of gas is drawn into the cylinder. After the explosion has taken place, the sliding of the sleeves brings the slot B in the inner sleeve opposite slot A in the outer sleeve, and right opposite the exhaust port E, allowing the burnt gas to escape through the exhaust manifold.

Why Greater Power

The valve openings are larger than is possible with any other style of valve, so that greater power is secured through admittance of a fuller charge of gas, as also because of a more complete scavenging of the cylinder chamber after the explosion. Loss of compression through leakage at the sliding sleeves is impossible.

Complete water jacketing encircles the cylinders, cylinder heads, circulation areas enclosing the spark plugs, and also the gas ways, so that a uniform heat is maintained the entire length of the piston travel.

The magneto and pump drive shaft, as also the valve shaft, are driven by silent chains. Today the silent chain is used on scores of foreign cars to drive the cam shafts.

Its Wonderful Oiling System

The lubrication of the "Stoddard-Dayton-Knight" motor is what is known as the "movable-dam" system. Located transversely beneath the six connecting rods are six oil troughs hinged on a shaft connected with the throttle. With the opening and closing of the throttle these troughs are automatically raised and lowered. When the throttle is opened, which raises the troughs, the ends of the connecting rods dip deep into the oil and create a splashing of oil on the lower ends of the sliding sleeves.

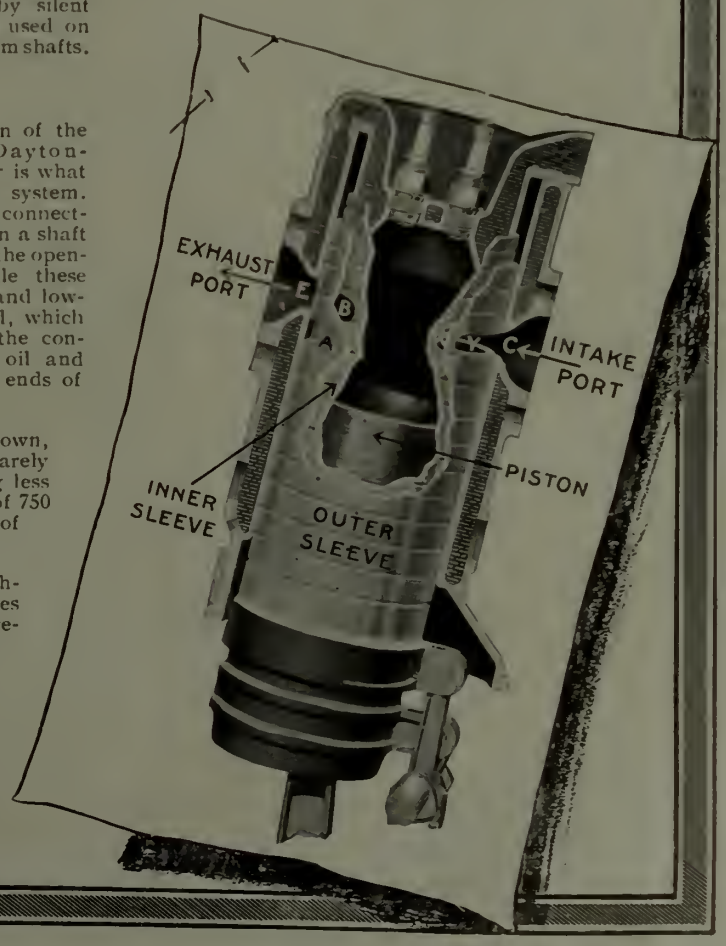
When the motor is throttled down, which lowers the troughs, the rods barely touch the oil and a corresponding less amount of oil is splashed. Tests of 750 miles of running on a single gallon of oil have been many.

The engine runs with equal smoothness at 50 miles or 15. It accelerates and gets away under load with remarkable ease, changing from 5 to 50 miles, if desired, without slipping the clutch or changing gears.

A "Silent Knight" motor in a five-seated car, in which were two passengers, has accelerated from a standing start on high gear to more than 35 miles an hour in 30 seconds. Surely this is an indication of remarkable low-speed engine torque.

Nothing short of an actual trial of the car can possibly convey any adequate appreciation of its characteristics.

Its silence, the peculiar light feeling of the engine, and its great reserve power constitute one of the great delights in driving this car.



Write for Details of Satisfied Owners' Free Inspection Service, and Catalog of all Models.

Dayton Motor Car Company 42 West 61st St. at Broadway **New York**

Division of UNITED STATES MOTOR COMPANY

TWO-CYCLE AND FOUR-CYCLE MOTORS

(*Continued from page 41*)

There is no scavenging or exhaust stroke in the two-cycle motor and the inrushing fresh gas is depended upon to drive out most of the exhaust gases that remain at the end of the power stroke. This is accomplished more or less thoroughly according to the excellence of the design. Most two-cycle motors are made with a deflector cast on the head of the piston so that the gas forced in through the port just above the piston will strike against it and be diverted to sweep up around the inside of the cylinder, pushing the burnt gases in front of it through the open exhaust port. The exhaust port is uncovered earlier in the power stroke than the inlet port and remains open longer.

Final compression of the fresh charge in the two-cycle motor begins on the first return stroke of the piston and is finished at the end of this stroke, when the cycle has been completed and the second charge is ready for ignition. Two piston strokes only have been required for the full cycle representing one revolution of the crankshaft, hence the term "two-cycle." The designations "two-cycle" and "four-cycle" are contractions of "two-stroke cycle" and "four-stroke cycle."

The advantages of the two-cycle motor are its simplicity, reliability, and comparative inexpensiveness. It is valveless, the piston in passing over open ports in the cylinder wall acting like a slide valve in a steam engine; hence inlet and exhaust valves, with their operating mechanism, are dispensed with. The difficulty of scavenging effectually at the high rotative speeds at which automobile engines operate and of locating and proportioning the exhaust and intake ports so that the motor will work at such high efficiency in proportion to weight and fuel consumption as does the four-cycle motor are the principal objections that have been made against the use of two-cycle motors in automobiles. These objections do not have much weight in connection with motor-boats except in high-speed craft, for the reason that sudden variations of motor speeds are not called for as often in motor-boat work as in automobile work. There are, however, several well-known makes of motor cars in successful operation in which the two-cycle engine is used.

JOSEPH TRACY.

POWER YACHTING

(*Continued from page 42*)

of course, the cost of such a boat, which, however, will be in the neighborhood of $15,000. Her construction is of the finest throughout. Briefly, her principal specifications are as follows:

Length over all	66 feet 0 inches
Length load water line	60 feet 9 inches
Extreme beam	10 feet 8 inches
Draft aft (about)	3 feet 9 inches

The keel, stern, stem post, deadwood, frames, floors, deck beams, and motor bed are of white oak; the planking of Virginia cedar, finished not less than one inch thick; the bilge stringers and bulkheads of yellow pine; the deck plank and the cabin deck (the latter canvas covered) of white pine; and the sheer strake, plank-sheer, and sides of the raised deck and cabin, of mahogany. Other specifications are shown on the plan.

This boat is provided with all the accessories necessary for the greatest comfort and convenience. She is electrically lighted with power supplied by a dynamo. The two gasolene tanks of seventy-five gallons each are placed under the cockpit floor, one on each side of the keel. Here also is located the fresh-water tank.

The raised deck cabin is about 10 feet 8 inches wide and 18 feet long and is of mahogany finished bright and with upholstery to suit the taste. Windows made to swing up do away with the necessity of having to squint through a narrow port-hole in order to see the world without. This interior is left in one large cabin instead of being partitioned off into staterooms. Privacy for sleeping is obtained in the orthodox Pullman manner.

The gasolene boat as a passenger ferry, too, is coming into general use in many places where

TO encourage people to establish country homes is one of the objects of this magazine. The interest aroused and the impetus given toward home building out of town, the question **where shall I find a place** still remains to be answered. The real estate advertising in the front of each number of *Country Life in America* answers this question for many every month. Many places are offered for sale or for rent by the owners. Many more are offered by reliable real estate agents. Whether you hanker for a bit of land yourself or not you will be stirred by the land hunger if you read the real estate advertising in the front of this magazine.

He looked at me with a good deal of incredulity not unmixed with pity, but as all Englishmen are supposed to be wealthy he decided to take a chance and supplied me with a bath and dinner, after which I caught the boat to England.

Although I left my machine in a field, entirely unprotected, upon inspection the next day it was found that while the ground all around it had been trampled flat by the people inspecting it, not a thing was damaged or an article removed.

THOMAS SOPWITH.

TYPES OF AEROPLANES

III. THE CURTISS BIPLANE

THERE is probably no man actively interested in aviation who has contributed more toward its advancement than Mr. Glenn H. Curtiss. Mr. Curtiss for a long while held the world's record for speed, having covered a mile in twenty-six seconds at Ormond Beach with an eight-cylinder motor-cycle. It was through his intimate knowledge of light-weight gasolene motors that he first became interested

Copyright, 1908, by Edwin Levick

Curtiss in the *June Bug*, the first flying machine to win a cup

in aviation, and after supplying Captain T. S. Baldwin with a motor for his dirigible balloon, he decided to experiment with the swifter and more precarious type of airship, the aeroplane. Associated with Messrs. Graham Bell and J. A. D. McCurdy he formed what was known as the Aerial Experiment Co., and which was to remain in existence until the first successful heavier-than-air machine was produced.

In 1908, as a result of the experiments of the Aerial Experiment Co., the *June Bug* made its appearance at Hammondsport, N. Y. This

Curtiss in the *Triad*, his hydro-aeroplane. This is his latest invention in the field of aeronautics

was one of the first successful American flying-machines, and with this machine Mr. Curtiss won the first legion of the *Scientific American* Trophy.

In June, 1909, with the aid of Mr. A. M. Herring, Curtiss produced the first of the machines of his present type, and was requested by the Aero Club of America to represent the United States in the Gorden Bennett Aviation Contest to be held at Rheims, France. He was successful in winning this race and thus bringing to the United States the classic cup of aviation. He told the story of this memorable contest in COUNTRY LIFE IN AMERICA for November, 1909.

The present Curtiss machine is but slightly different from the one with which he won the Gordon Bennett cup. The principal changes are in the front control, which is now a single surface, and working in connection with this is a flap on the rear stabilizer. The rear outriggers are a little longer, and the front rudder is placed nearer to the planes.

A few Curtiss features are rigid running gear, and the method of controlling the machine. The ailerons, situated between the planes at the ends, are connected to a framework which fits around the aviator's shoulders and is so arranged

that he can balance the machine by moving his body in the natural positions of keeping himself upright. The rear vertical rudder is controlled by a wheel which is attached to the same lever as the elevating planes. Mr. Curtiss's latest development is the hydro-aeroplane, in which he has been able to rise and descend upon the water as well as on land.

Besides winning the first Gordon Bennett race, Mr. Curtiss won the $10,000 prize offered by the New York *World* for a flight from Albany to New York City, and Mr. Ely on one of the Curtiss machines successfully landed on a deck of a battleship, a feat hitherto considered impossible.

The spread of the Curtiss machine is 26 ft. 42 in., and the depth 4 ft. 5 in., giving an area of 220 sq. ft. The planes are set five feet apart. The usual motor equipment is a 50-horsepower, 8-cylinder, water-cooled engine, although a number of his machines are equipped with a 25-horsepower, 4-cylinder motor.

SHERWIN HAWLEY.

THE SPORT OF FOX HUNTING

(*Continued from page 22*)

Grafton Club and its members, there has, in the past three or four years, come in a number of deer, and frequently I have seen the hounds in full cry after a fox "flush" a deer, so to speak; but although his trail ran within a yard or two of that made in the open by Reynard, they paid no attention to it.

Eight or ten couples of hounds are plenty. Buy slow ones rather than fast ones, and old, thoroughly broken hounds rather than young ones inclined to riot; or be sure enough of yourself to know and respect their efforts. Remember, an honest hound never lies, so trust him over every man in the field.

I was out one lovely morning last July with the Master of the Brunswick Foxhound Club, John P. Bowditch of Framingham. We were both mounted on clean-breds, trotting along toward cover, at 5.30 A. M., when suddenly the hounds broke from behind us into a cornfield and rushed about in it madly. I at once thought it might be a cat, but still trusted them, and, in a few moments, from the further corner out popped a big red fox, with the whole pack running him by sight, screaming with their mouths open, and what a chase it was! For an hour and a half the fox led over the open pastures, through the mowings, in the woodland, running rings and rings about in the sprout land, trying to shake off the hounds maddened by the close view and the perfect scent which was rising from the dew-sparkled grass and ground. Time and time again we cut in on the hounds (for in New England it is impossible to follow straight) and at 6.30 began to feel that we would bring the fox to hand. Suddenly we heard the packs coming with steady cry down beside a little brook to the road right at our feet, and then, to our dismay, out trotted a black and white cat, scurrying *up the road* to the farmhouse. But still I trusted.

Scallywag was in the lead, with Scarecrow and Simpleton at his shoulders, and then my trust was rewarded, for Scallywag carried the line *across the road* and into the meadow. The red by this time was pretty well broken down, and running into a farmer's front yard he dodged back and forth in the flower beds.

We were over the white fence on the gravel walks, urging on the hounds, when up went a window and an old lady appeared from behind the curtain.

"Can't you keep out of my front yard with all those dogs and not wake my children up in the morning?" she cried.

I said, taking off my cap, "Madam, has not that fox been killing your chickens all the year? We are simply trying to kill him for you."

She replied "No," and down went the window with a crash, and we went through the back yard, under the clotheslines, and over the fence after the pack flying over the hill.

Here the red took to the stone walls which are the great puzzle of fox hunting in Massachusetts, and with the hot sun coming up, the scent soon made slow trailing so that we whistled the pack off, and after schooling one or two thoroughbreds over the steeplechase course with a bully bath in the artesian well water, we were ready for breakfast at 8 A. M.

Hunting in any country is simply by courtesy of the land owners, and whereas the killing of the fox is the true test of the hunt, the necessity of the death is more strongly brought out when one understands that the fox himself is the enemy of the farmer. Especially in America, where one man considers himself as good as another, does the tiller of the soil expect something to be accomplished if you are to be allowed to trample over his farm and break a fence now and then. Here there is no way of collecting a farthing for every footprint in the wheat field, as was charged in Europe years ago, but in the States, if one has a pack of hounds that can hunt and kill the red fox he is the friend of the farmer forever.

When the writer took the Loudoun country in 1908, there was $175 of back damage to pay and signs posted everywhere. With the back damage paid and the statement that every

There is no more glorious sensation than that which comes from the throbbing thoroughbred

claim would be met promptly and fairly and that the destroyer of the turkey and hen roosts would be followed to his death, a truce was declared. That season there were fourteen masks on the kennel door and only $70 of claims were sent in. The next year, though we hunted continuously from the first of October to the first of February, over the same country, not a dollar was asked but always the same cordial friendship between man and man. They knew that the hunt and hounds were keen, were out for sport and would respect their every wish, and time and time again would come directly to the Master and ask him to be sure to come up and hunt around their plantations, as foxes were killing their chickens.

Down deep in every man's heart is the desire to be a land owner, and when one, after years of toil in acquiring a fortune, at last selects his country home, let me say that there is no better way of proving one's self a friend of the farmer than by starting a pack of foxhounds or by subscribing to the present pack in a generous way, and thereby establishing a feeling of friendship and courtesy between town and country.

The Duke of Wellington subscribed £500 a year to the Vine Hounds, and in the Spanish Invasion and at Waterloo said that his best cavalry officers were made in the hunting fields of England.

There is no better or healthier enjoyment than the mastership of a pack of hounds, and no more glorious sensation than that which comes from the combination of the throbbing thoroughbred and the crash of hounds in the woodland.

SUCCESS FROM FALL PLANTING OF ROSES

ROSES should be planted in an open space well away from voracious roots of trees or shrubs, and as much as possible in the sunlight, where they can get a free circulation of air. The beds should be dug three feet in depth and all the soil taken out. A system of drainage should be laid from every bed, since we often have heavy rains which fill the bed, particularly in clay soil. In our clay, for instance, we have been obliged to resort to a regular system of tile drainage. If the ground is porous, this is unnecessary. At any rate the bottom should be filled with six inches of stones, broken bricks or slow rotting branches, and covered over an equal depth with broken, fresh sods. The ideal soil is a rich porous loam,

Kennel Directory

In this department are printed the advertisements of reliable kennels. The Kennel Department of COUNTRY LIFE IN AMERICA invites correspondence and will be glad to send to its readers any information about dogs which they may desire. Address KENNEL DEPARTMENT, COUNTRY LIFE IN AMERICA, 11-13 W. 32d Street, New York.

Live Stock Directory

In this department are printed the advertisements of reliable stock farms. The Live Stock Department of COUNTRY LIFE IN AMERICA will be glad to send to its readers any information about stock which they may desire. Address LIVE STOCK DEPARTMENT, COUNTRY LIFE IN AMERICA, N. Y.

or well rotted sod-soil mixed with a full third of well rotted cow manure and a liberal mixture of coarse, crushed bone meal, such as is used for graperies. In this way I obtain both immediate and lasting results. The beds should be well filled up to four to five inches above the level of the surrounding grounds, the soil having been prepared and well mixed before being carted to the beds.

October and November are the best months to plant roses. Hybrid Perpetuals in well prepared beds should be planted two feet apart. Hybrid Teas and Teas can be planted a little more closely, from fifteen to eighteen inches apart. In planting budded or grafted plants it is especially recommended to plant the graft from two to three inches below the soil. The roots should not be pruned, and should be spread carefully with the hand, and the soil pressed firmly around them with the foot. At this late season the plants are in a dormant state and the soil is ordinarily sufficiently moist and needs no watering.

When planting in the spring it is advisable to water immediately afterward, or to puddle the roots in mud. Prepare this in a hole or tub with water and mellow soil mixed until it is dissolved, so that the mud will hold itself around every root. Then plant at once without letting the roots become at all dry.

My Maryland. a salmon-colored hybrid tea. one of the most promising new varieties

In a cold climate like that of the New England States all roses should be protected from the extreme frost. The beds should be dug and fresh rotted manure put in the soil brought well up around the plants from year to year, after the second year from planting. Put a good layer of leaves at least six inches thick between the plants, and cover with a few spruce or hemlock branches or long, strawy horse manure to keep it in place. At about the end of March or the first of April the protection should be removed, the beds cleared and the soil leveled.

It is then time to prune. The small wood should be cut out, and the fine strong wood cut back the first year to six or eight inches above the ground. After the second year the wood of new canes should be pruned back to about a foot and the small and red wood removed entirely. Familiarity with the general growth of the plants will readily teach the lover of plants how to prune them, so that he will achieve the very best results. The grower of budded roses must always remember to watch his plants so that the suckers may not shoot up from time to time. These should be carefully removed. They can be easily distinguished from the main plant by their different foliage and color, and their more thickly set thorns.

During June we often have very trying spells, and a good mulching with fine manure or grass cuttings is very effective in conserving the moisture. Copious waterings should be given. In cutting long-stem roses, there should always be two or three eyes left below the cut, so as to give the plant a chance to produce new wood for the following year.

We are also troubled with mildew. This appears as a grayish, crinkled condition of the foliage, and usually occurs after cool nights and where the air drainage is bad. Remedy: dust the foliage lightly with sulphur. Black spot, a fungus disease, appears, as its name indicates, as black spots on the foliage, causing it to fall. It rarely occurs in the early spring, especially on Hybrid Perpetuals. On its appearance, a Bordeaux mixture should be applied. The Green Fly is a troublesome insect, which appears especially on the ends of the new growth. Tobacco water made by steeping tobacco stems in hot water until the water is a deep brown (twenty-four hours is sufficient to have it strong enough) and sprayed with a greenhouse syringe for several evenings is found very effective. The Green Worm, which feeds on the foliage, is another insect with which we have to battle. An application of powdered hellebore should be applied in the early morning with a bellows while the dew is on the foliage. After the foliage has become dry it can be washed off easily with a hose. This should be applied two or three times a week, and when taken in time, will keep the foliage in perfect condition. We are also troubled with the so-called rose bug, which is quite a nuisance in many localities. They feed on the most delicate colored rose petals. The only satisfactory remedy I have found is to have these followed up in the early morning, and gathered in a vessel containing kerosene.

J. F. Huss.

A WORD FROM THE EDITORS

THE next issue—November 1st—while a "regular" number, will contain several Western features. Some of these are "Country Life in the Reclaimed Desert," by Arthur W. Page, illustrated with photographs by the United States Reclamation Service; "A Mexican House and Garden in California," by Elva Elliott Sayford; and "The Cabin and the House," by Charles Stuart Moody.

The "Cutting Loose from the City" series is continued with a city-bred man's experience in wresting a living from the granite hills of New Hampshire. Other articles of general interest are "The Whistling Swan of Currituck Sound," by A. Radclyffe Dugmore, with photographs by the author; "The Feathered Carpenter of the November Woods," by John Burroughs; "The White-Marked Tussock Moth," by Sara Savage Miller; "A New Farmhouse of the Old-Time Type," by Sherwin Hawley; and "A House Designed to be Attractive on All Sides," by Jonathan A. Rawson, Jr.

The department "Country Life Abroad" changes place with "Stable and Kennel" in this number, and will be published hereafter in the first-of-the-month issue. Other departments are "The Amateur Photographer," in which the subject of window photography is treated; "The Nature Club," and "Stock and Poultry."

LADY WASHINGTON GERANIUMS

AS A rule Lady Washington geraniums (see photograph on page 44) prefer to bloom early and only once a year, but they can be coaxed into a fairly long season. A new variety, Easter Greeting, claims to be "ever-blooming"—that is, it continues in flower through the summer and autumn. It is described as "bright amaranth-red, each petal marked with a large blotch." Other named kinds are Mme. Thibaut — white, marked with rose and maroon; Linda — salmon and maroon; Duke of Cornwall — crimson, with salmon edge; Sandiford's Best — pink with white band; Crimson King — deep crimson; and Mrs. R. Sandiford — pure white. The handsomest kinds are white blotched with rose pink and a rich, deeper pink blotched with maroon.

Like so many other interesting plants, Lady Washington geraniums have South African ancestry. They are supposed to possess the blood of *P. cucullatum*, common around Cape Town and used as a hedge plant; *P. angulosum*, a similar species, and *P. grandiflorum*, though Bailey finds a scant trace of the last. It, counting *P. cucullatum* as its chief parent, was brought into England so long ago as 1690 — before either the zonal (1710) or the "fish" (1714) geranium.

H. S. A.

Poultry Directory

In this department are printed the advertisements of reliable poultry breeders and dealers in poultry supplies. The Poultry Department of COUNTRY LIFE IN AMERICA will be glad to send to its readers any information about poultry which they may desire. Address POULTRY DEPARTMENT, COUNTRY LIFE IN AMERICA, 11-13 West 32d Street, New York

A Gateway to Bookland

WITH the return of the days when a book and a fire become increasingly alluring, we are glad to write down the names of many old friends in whose pages you have often found pleasure and profit. There are new names, too, affixed to volumes about which we have enthusiastic convictions. Old and new, we think you will find many interesting things in the following announcement of fall publications.

Specially Illustrated Gift Books

Siegfried and Götterdämmerung

(Companion volume to "Rheingold and Valkyrie.") Beautifully illustrated in full colors and black and white by ARTHUR RACKHAM. Boxed, net, $5.00. Edition de Luxe limited to 100 copies, net, $15.00 (postage 30c.)

One Hundred Masterpieces

By JOHN LA FARGE. A treasure-house of the world's greatest paintings. One hundred and twelve full-page illustrations. Net, $5.00 (postage 30c.)

Grimm's Fairy Tales

Illustrated by ARTHUR RACKHAM. A new and popular edition of these tales which have brought such sheer delight to the young of all ages. Twelve pages in full colors. Net, $1.50 (postage 15c.)

Adventures in Friendship
Adventures in Contentment

By DAVID GRAYSON. *New Leather Edition.* Two volumes of heart's-ease for city-tired folk. Uniformly bound in flexible leather and illustrated in full colors and in black and white by Thomas F. Fogarty. Boxed, each $1.50 (postage 15c.)

Christmas Books

The Gift of the Wise Men

By O. HENRY. Special edition of this charming Christmas tale. Illustrated in colors and decorated by Charles M. Relyea. Fixed price, 50 cents (postage 8c.)

On Christmas Day in the Morning
On Christmas Day in the Evening

By GRACE S. RICHMOND. *New Leather Edition.* Two of the most popular Holiday books issued in a long time. Illustrated in full colors by Charles M. Relyea. Leather, each fixed price, $1.00. Boards, each fixed price, 50 cents (postage 8c.)

The Boy Who Brought Christmas

By ALICE MORGAN. A story with that elusive Holiday Spirit in every page. Uniform with the Richmond books. Illustrated in colors by John Edwin Jackson. Fixed price, 50 cents (postage 8c.)

Novels

The Harvester

By GENE STRATTON-PORTER. *Author of "Freckles" and "A Girl of the Limberlost."* Illustrated in colors. Decorated Wrapper and Lining-pages. Fixed price, $1.35 (postage 12c.)

The Case of Richard Meynell

By MRS. HUMPHRY WARD. Six photogravure illustrations. Fixed price, $1.35 (postage 12c.)

The Last Galley

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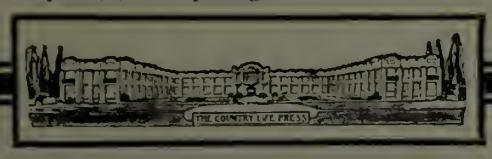

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