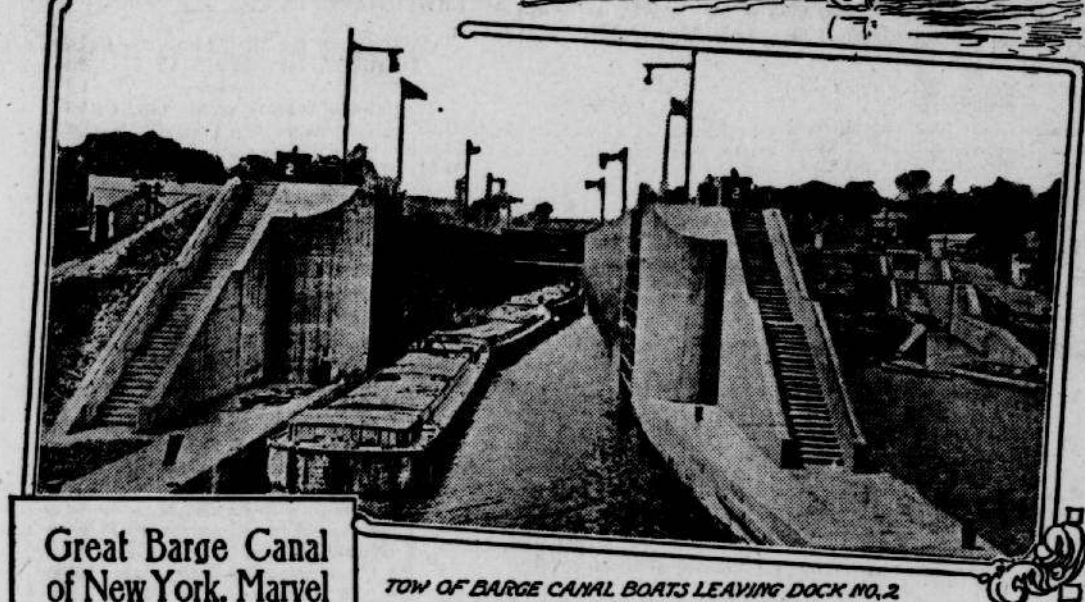


# Great Lakes Linked With Atlantic



Great Barge Canal of New York. Marvel of Engineering. Aids War Transportation

TOW OF BARGE CANAL BOATS LEAVING DOCK NO. 2

By ROBERT H. MOULTON.

**T**HE opening for through traffic of the Barge canal of New York, remarkable both for its picturesqueness and for the engineering difficulties overcome in construction, which links the Great Lakes with the Atlantic ocean was formally celebrated recently. The completion of this great inland waterway, which required 13 years to build and involved the expenditure of approximately \$150,000,000, will be a wonderful boon to wartime transportation. It will relieve the railroads of a tremendous quantity of nonperishable freight. Its capacity is estimated at ten million tons annually, which is the equivalent of half a million carloads.

The canal is made up of four different channels, all of which have the same general dimensions, the depth being about 12 feet and width varying from 75 feet in earth sections of "land line" to a minimum of 200 feet in the beds of canalized rivers and lakes. These channels are: The Erie canal, or main line, between Buffalo and Troy; the Oswego, running from Syracuse to Lake Ontario; the Champlain, extending from Troy up the Hudson to Lake Champlain, and the Cayuga-Seneca, connecting the so-called "Finger-Lakes" with the main channel. By means of the Hudson river, New York city and the municipalities and villages south of Albany are brought into touch with the system.

This new channel was constructed in accordance with principles radically different from those which governed old canals. On these old channels the idea was to keep the hillside above the rivers and streams and to use animal power for towing purposes. In the present work, however, the practice in vogue on the Continent, where the low-water routes available in natural streams are used, has been followed wherever practicable. In fact, the larger part of the new system consists of the canalization of the rivers and lakes.

## Locks and Dams Built.

In order to make navigation possible on the rivers and lakes it was necessary to maintain a specified minimum depth and provide what is termed "slack-water navigation." This was accomplished by the construction of dams and locks, the dams holding the water at a more or less fixed elevation above the level of the stream and the locks permitting the barges to move from one level to another. Between Little Falls and Troy, on the Erie canal, ten dams have been constructed, which provide for navigation on the canalized Mohawk river. Two of these structures are of the "fixed type" while eight are movable. These actually make the river a series of lakes, the water between the dams being practically level and ordinarily without much current. A lock is constructed at one side of each dam to enable the barges to pass from the different levels.

Many travelers across the state have wondered at the movable dams which appear to be steel bridges, yet have no approaches. This type of structure was necessary, however, because from the bridge floor of each structure the controlling works, which swing underneath, are operated. These works consist of heavy steel frames and gates which may be lowered or raised at will by operating electric winches running on the bridge floor of the dam. The particular function of the movable dam is that when the gates are raised, during the winter months and spring

flood period, it allows the river to flow on uninterrupted, while during the navigation season it serves its full purpose as a dam and may be so operated as to pass a large or small quantity of water, thus keeping each pool at its proper level.

## Highest Lift Locks.

There are 36 locks on the Erie canal, all of which are massive concrete structures, having inside rectangular dimensions of 300 by 44.4 feet and a lifting capacity varying from a few feet up to 40½ feet. At Waterford the locks are so constructed that a series of five serves to lift the barges from the Hudson river to the canalized Mohawk river, 169 feet above the level of the government lock at the Troy dam. These structures have been called the world's greatest series of high-lift locks and their lift is double that of the locks in the Panama canal from sea level to summit.

One of the highest lift locks in the world is located at Little Falls, where the difference in pool elevation is 40½ feet. This massive structure has concrete walls, which stand 80 feet high and are 30 feet wide at the base. The lower gate is of the lift type and is raised and lowered, instead of being swung open and shut as are the gates on other locks.

In the operation of all locks the water is admitted to and drawn from the chamber by means of culverts running through the side walls, and the openings have been so designed that the filling and emptying of the chamber is only a matter of a few minutes. The locks are all electrically operated and the gates are filled or emptied while the gates and valves are opened or closed by simply turning a lever. Safety devices are also arranged so that errors in operation or navigation are practically eliminated.

The Erie canal is spanned by 232 bridges, of which 50 are railroad crossings. The clearance under these structures must be at least 15½ feet.

## Guard Against Accident.

In the "land line," guard gates have been provided which are located about ten miles apart. These are steel structures, suspended from towers and may be lowered to hold the water, in case of emergency, such as might exist if an embankment became weakened or any similar accident made it desirable to unwater any section of the canal. Numerous culverts and spillways which keep the water from overflowing the banks have been provided and a hundred million yards of earth and rock have been removed, while three million yards of concrete have been placed.

While the actual construction period has been about 13 years, this, considering the magnitude and ramifications of the work, is a very short time. The many structures and the nature of the territory through which the different channels run has made this one of the really important engineering undertakings of the age, and the construction details have been the most extensive, the plans alone being some of the most elaborate and complete ever drawn up for any large construction work.

The cost of handling freight on the railroads, before recent increases went into effect, varied from two to seven mills per ton per mile, the average being between three and six mills per ton mile. It is now estimated that this figure will be reduced more than one-half on the new canal system, owing to the larger barges and the thoroughly up-to-date facilities. The method of propulsion used is by power boats driven either by steam, electricity or the internal combustion engine, and it has already been determined from trial trips that the speed which may be maintained throughout the system is considerably in excess of that main-

tained by ordinary freight trains, either in normal times or under present conditions.

**Transportation Problem Acute.** It is admitted that the transportation facilities of our country, as well as our transoceanic shipping, underlie our ability to carry the present war to a successful conclusion. The war has, indeed, brought us face to face with a problem in transportation that is vital and critical. There is not a business community from one end of the country to the other that is not dealing with the question. A congestion has arisen that has affected almost every factory in the United States and even extended to our homes.

The New York Barge canal offers a solution to many of our transportation problems. This waterway—and it may be called the most important canal in the United States—has been thrown open at a time when its usefulness can be fully appreciated, and when it can fulfill a mission not dreamed of by its original projectors. It can easily carry a total of ten million tons of freight and this is as much as can be carried on one-fifth of all the freight cars on all the rail lines in the United States. It is equivalent to what could be carried on a string of freight cars which, if placed end to end, would extend from Denver to New York city.

## Color and Horse Character.

An old cavalry officer says that one may judge the constitution and character of a horse from its color. Bright chestnuts and light bays are high spirited, but nervous and delicate. Dark chestnuts and glossy blacks are hardy and good tempered. Rich bays have great spirit, but are teachable. Dark and iron grays are hardy and sound, while light grays are the opposite.

Roans, either strawberry or blue, are the hardest and best working of all, even tempered, easiest to train, taking kindly to everything. Rusty blacks are distinguished for their pig-headedness. A horse's "white stockings" give another clew to character. A horse with one white leg is a bad one, with two its temper is uncertain, with three it is absolutely safe, with four may be trusted for a while only.

## Why Indeed?

If we may judge by the recent and determined intrusion of spirits into authorship, heaven bids fair to be stacked with printing presses. One of their number, indeed, the "Living Dead Man," whose publishers have unhesitatingly revealed (or, I might say, announced) his identity, gives high praise to a ghostly library, well catalogued, and containing millions of books and records. With such resources at their command, with the universe for inspiration, and the uncounted dead for readers, why should disembodied spirits force an entrance into our congested literary world and compete with the living scribblers who ask their little day?—Agnes Repplier, in the Atlantic.

## Selling Money a Business in China.

In China dealing in money is a business, one of the flourishing industries of the country, says World Outlook. There are shops that deal in nothing else—money exchange shops. You will find one in nearly every twisted little street in every city, often merely little holes in the wall, where a skull-capped proprietor sits behind a brass railing with little piles of money on each side of him and swiftly fingers his counting board. Here you go shopping for money, just as you go for white Canton silk, and you bargain just as long and just as hard in the oblique and devious ways of the Orient. A national currency system there is not. The coins, like the dialects, change as you go from city to city.

## Good Money for Day's Work.

It is said that a boat with five fishermen went out reeling from Orr's Island, Me., for herring recently and received \$500 for their day's work, sharing \$100 each.

## Hell-Dog.

Cerberus in ancient Greek story was the sleepless dog which guarded the entrance to Hades; the lower or infernal regions in which dwell the shades of the dead. He is usually represented with three heads, and with serpents round his neck.

## When It Grew.

"Our children and the neighbors' children had a quarrel yesterday." "Did it amount to much?" "Not until we parents butted into it."

## GOT THE BANANAS

Patriotic American in Border Town Did Extra "Bit."

How Marching Boys in Olive Drab Got Delicacy Almost Under the Eyes of the Discipline-Loving Sergeant.

It is midnight. In the border town across the river the populace has gone to bed. The streets are deserted and silent save for the measured tread of the occasional policeman on his nocturnal rounds. But the lights are still glowing in the railway station on the water front, their brightness intensified by the enveloping gloom.

A train of Pullmans rumbles in from the ferry dock with a great jangling of bells and creaking of wheels as the brakes take hold. In the stillness of the night the racket is magnified a thousandfold, but the town slumbers on.

Above the incessant clang of the locomotive bell and the hiss of escaping steam there comes to the ears of the wayfarer from the States a sound that instantly claims his attention—the rhythmic tramp, tramp, of feet, hundreds, thousands of them it seems, as the faint staccato becomes a muffled roar. There is no resisting its lure. The wayfarer turns in his tracks and waits.

"Left—turn!" rings out the crisp command close at hand and, with wheel-like precision, a column of marching men in the familiar olive drab rolls into view around the corner. "Yanks, sure as I'm alive!" exclaims the man from the States as he falls into step and follows along the sidewalk.

Yes, Yanks—Uncle Sam's own doughboys on their way to Berlin via the western front, and out to liberate a new engine is being hooked up.

On they come, alert, keen-eyed fellows fresh from the training camps, splendid Americans all, and eager for a brush with the Hun.

Still the town slumbers—it is accustomed to such sights; but to the American, taken unawares, it is an inspiring thing.

Far up the street, an oasis in the black desert of night, a friendly light beacons. As the column approaches the boys recognize the familiar outlines of a fruit stand. The enterprising merchant knows all about these midnight "parades" and is prepared. A thousand pairs of eyes turn hungrily to bunches of yellow bananas dangling from their hooks, but the trim young sergeant is looking straight ahead. They are all business, those sergeants.

The man from the States has seen it all; it is his chance. A crisp American bank note quickly changes hands and presently there is an empty hook where a bunch of bananas hung a moment before. Magically, it seems, the coveted fruit has found its way into the rear ranks. Like a cork in a rough sea the bulky thing is tossed along from line to line, growing constantly smaller until the bare stalk is thrown into the gutter, leaving a hundred bulging pockets in its wake.

Thus did one patriotic fund subscriber do an extra "bit" for the boys of the olive drab. At any rate, he wore the patriotic fund emblem on his coat.

## Get Complete Family Record.

Sugar records now being kept in grocery stores are causing some perturbation on the part of grocery men. Since the food administration limited the amount of sugar a family can use per month, the grocers have had to keep track of the amount sold to each customer.

For this purpose they use a sort of book, or ledger, in which the customer's name and address, and other information pertaining thereto, are recorded.

Since most of the purchasers are women, it can be imagined that the grocers' task, sometimes, is not so easy, but the women, realizing that the information must be given, have gracefully acceded to it.

Nor is that all. Grocers do tell that they get more information than they have any need for. Here's how it is:

"They insist on telling me all about little Johnny, and what little Susie is doing today, and—why, say, since we started this here sugar record, we know the complete family history of all our customers."

Now what do you know about that?—Washington Star.

## Modern Armor.

The soldiers of old went forth to fight, clad in cumbersome and expensive armor, which, while serving as a protection, nevertheless hindered them from putting forth their best fighting strength. Today Martin Jellalian, an inventor of Rhode Island, has made it possible for a soldier to be protected by armor. He is one of several dozen inventors who have re-invented the coat of mail.

The device is a bulletproof metallic structure, which surrounds the body and extends from the top of the shoulders to below the thighs. This steel coat consists of two like parts held together across the chest by means of straps. Hooks attach the coat to semi-cylindrical pieces of metal which fit closely about the upper part of the leg and are fastened behind by straps. The inner surface of the armor is padded. The head is protected by a lined mask composed of the same metal.—Popular Science Monthly.

## Genuine Motives.

Not until the cuticle is probed through and the sensitive cutis is touched do we really feel the surgeon's keen lancet. Are we going to squirm and evade the painful issues of our war tasks only to let the unfeeling cuticle of indifference close over festering sores entailing even more harassing agony later, perhaps? A test implies comparison. When you give up some accustomed luxury do you stop to compare this sacrifice with the pang of countless refugee mothers giving to their offspring the crust of bread they crave for themselves?

## Lace and Satin Dinner Gown



It always takes exceptions to prove the rule and to keep certain accepted styles from becoming monotonous. The handsome dinner gown which presents its brilliant accomplishment in black and white with such assurance here is an exception to the straight-line silhouette. It belongs to a small and exclusive company of exceptions to this feature of the styles for fall, for the straight-line figure grows more popular all the time and is destined to dominate in the styles of the coming season.

Allover lace and black satin join forces in the tunic skirt and bodice. There is an underskirt of white satin bordered with black. The tunic is set onto a body of black satin that forms a short yoke extending a few inches below the waistline, and has a border of black satin about its lower edge. The lace bodice is very simply draped over its satin foundation and the sleeves are of lace—rather full above the elbow and shaped to the arm below.

They extend a little way over the hand and are finished with a narrow binding of satin. A bit of white georgette suggests an underbodice of this lovely fabric, where it shows through the lace at the shoulders and above the satin at the square neck. If this gown started out with a declaration of independence as to its outline, it makes amends by making the most of the vogue for long silk tassels. There is a very long girde of the satin that is wrapped about the waist, crossed at the back and looped over at the left side. The ends, finished with long, handsome silk tassels, fall to the bottom of the tunic and a little below the bottom of the skirt.

This gown is becoming to almost any type of figure. It is dignified and quiet, but it is also brilliant. In the picture a big black satin poppy adds its fine silken sheen to the finish of an exquisite frock. It is in black also, but might be in some brilliant color if occasion seemed to demand it.

## Simple, Elegant Afternoon Gown



Magnificence is not a characteristic of any of the dressier gowns for afternoon and evening these days, but they rejoice in simplicity and elegance. These are the indispensable things in war time, and the most satisfactory in any time. Ingenuity in the management of simple trimming takes the place of lavish work in elaborate embroideries. About all the chance left for midday to be splendid in sumptuous clothes lies in the direction of fur. Among these there are some superb pieces, but they are bought for a lifetime and so their case and that of gowns are not parallel. They are allowable even when good taste forbids other extravagance.

An afternoon frock as presented in the picture seems almost too simple to need a description. It is of blue georgette over an underlay of satin and is made with a bodice and tunic skirt. The tunic is plaited onto the plain crepe bodice at the waistline, which is a little higher than the normal waistline of the undershirt. Straight bands of satin are applied to the bodice. One of them at each side extends over the shoulder and down the back. The three bands on the

front and back of the bodice between those at the sides, are pointed at the top. They all hang several inches below the waist and the end of each band is threaded through a bead. Two of these narrow silk bands are tucked about the waist and the bands that are applied to the bodice are threaded over and under them and then tucked to them. The ends hang free.

The same bands in five over-lapping rows are stitched about the tunic just above its hem. This is all there is to tell of a pretty afternoon gown which one must acknowledge achieves distinction by the simplest means. The round neck has a pleated edge and so have the sleeves at the wrist. They could not be plainer and they fit the arm from shoulder to hand.

Julie Bonny

## Camouflaging Moth Holes.

Moth holes in garments can be disguised by scraping the fuzz or lint from the material, filling the hole with this and backing it with a piece of rubber cement.

## Rubberized Silk Bags.

Among the modish bathing accessories are bags of thin rubberized silk. Sometimes these are hand-painted. A lovely model in green was beautifully ornamented in a goldfish design. There was a cap to match.

## Airy, Fairy Hats for Summer.

The light airiness of the summer hats is one of the most charming features of the summer. For all occasions that summertime brings in town or at the resort, there is a hat. For

## ONE JUNE NIGHT

By LOUISE OLIVER.

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It was a high iron fence covered with honeysuckle—the one between the Harringtons and the Neals—and with every year's growth of the vine and as every twig interlaced to thicken the density of the green wall, the barrier of hate between the two families had likewise grown in vast proportions.

The vine-covered fence itself commemorated the beginning of the feud, for, as is usually the case, it had started with a disagreement about the boundary line.

To arbitrate a quarrel is not to settle it. Neither side winning, there is no one to forgive. So the Harringtons and the Neals nursed their hate into the second generation, and still it grew.

Violet Harrington, the last and only one at home now, had always hated Dr. Wilbur Neal bitterly. She hated him chiefly because he had always seemed politely and supremely indifferent to her. He was almost the only man in town who had not sooner or later lost his heart to her. Violet had always been the envy of every girl in Coburg, because she was the prettiest and most popular. Naturally accustomed to homage, she resented the fact that Will Neal paid so much attention to his books to the exclusion almost of everything else.

Now she was twenty-eight and he was thirty, and neither of them was married. Knowing that she could have anybody, she had taken nobody. Now she was alone in the great house.

It was June and a wonderful moonlight night. Violet sat out under the maple tree in the yard, near the fence, in a soft white dress, stroking Dick, her Persian cat, and whispering little secrets in his ear.

"It's a lovely night, Dickie. Do you smell the roses? Listen! That soft little murmur is the voices of the love fairies. Do you hear? They slide down on the moonbeams and plan whom they shall ensnare next. Then they mix a sort of magic out of dew and fragrance, and fly with it to the chosen ones and anoint them. After that it's all over, Dick. That love potion never fails."

"I suppose you're wondering, Dick, why they never chose me. I've often wondered, too. I wonder why they never did. There are so many splendid, wonderful men, I wonder why I never loved any of them. I'm getting awfully old, Dick. Some day I'll be walking with a stick. Oh, Dick, I wish I could love somebody. I don't want to be old and lonely and ugly."

Her head went down on the soft coat and a tear dropped.

Suddenly there was a chirping and fluttering in the vines, and Dick immediately jumped down to investigate. A fledgling had dropped out of its nest and got tangled in the leaves.

Violet jumped out of the swing and hurried after him. But by the time she reached the vine-covered fence the cat had worked his sinuous way into its very heart. Stopping, she reached into the black shadows for her pet. But he was gone.

When she tried to straighten she found she could not. Her hair—a wonderful copper, the chief charm of her beauty, was caught cruelly by the thick, twisted branches. She took out the pins and tried to work it free, but it was useless. She found she could sit comfortably enough, but that was no help to matters. She couldn't stay there all night; too far back from the street to be heard, and no one near but the hated house of her neighbor.

Suddenly she heard a voice. It was masculine and quite near. She peered through the fence, and in the moonlight saw a swing much like her own, and in it a man smoking a cigarette. Between puffs he was talking to a white bulldog on the opposite seat. The man was Wilbur Neal and he was in uniform.

She started. She had not heard he had joined the army.

"Rags, it's a bully night, isn't it?" said Doctor Neal. "I wonder if they have nights like this in France? But of course they have, only I suppose I'll be too busy to notice them."

"It's funny, isn't it, Rags, how we waste time and waste it, and suddenly realize what things mean to us when they're about gone? For instance, there is a girl I like very much—very much indeed. And she hates me, and she thinks I hate her; and because I didn't know how to overcome her dislike I just let it go. And now it's too late to do anything about it. Too bad, isn't it? And if nothing happens to me in this war, and I come back, I'll grow into a cranky old man without friends. Isn't it silly? I've watched her grow up, and she's a fine, useful woman, as well as beautiful. And I've lost her because I haven't any courage. But I've courage tonight, I believe, Rags. I wonder what she'd say if I went over there? It's only next door, Rags."

But Rags had heard something. A white shadow had flashed out of the sedge, then in again. It was too much for canine endurance.

"Come here, Rags! Don't you hurt that cat. It's here. Rags, come here!" But Rags was barking at something more substantial than a shadow, and, refusing to move, his master followed.

So Doctor Neal found Violet Harrington a prisoner, and had to go around to her side to release her.

Two hours later, when he had taken a reluctant leave, Violet buried her head happily in Dick's soft coat.

"It must have been the love fairies, Dick," she whispered. "I'm going to marry him."

## Dutch Windmill.

A Dutch windmill of giant proportions stands in Golden Gate park in San Francisco. It is said to be the largest in the world. Even in Holland, the land of windmills, it is said, there is not one that comes up to its size. It is 86 feet high; its wings have a radius of 57 feet. In a 30-mile breeze it pumps 70,000 gallons an hour through a 12-inch pipe, which carries the water to a distance of two miles and a height of 200 feet. It was a gift to San Francisco from her leading citizens, and cost \$25,000.

## Neck Styles.

Neck ruffs, low and high, and all the latest styles are very frequent.