MODELS OF NAVAL SHIPS

Toy Manufacturers Catering to Popular Sentiment in Youths.

GREAT FUN FOR THE BOYS

The Most Attractive Models and How They Are Made—Tips for Youngsters Handy with a Knife.

The recent developments in the American-Spanish situation have aroused a keen interest in battleships, cruisers and other vessels built for war purposes. Not a day passes but one or more of the newspapers print illustrations of armored vessels. A well known toy firm in New York, recognizing the interest which has been aroused in the ships of our navy, is offering for sale small models of war vessels representing the Maine, Iowa, New York, Terror and other ironclads.

It is not necessary, however, to resort to the shops to acquire a well-constructed and fully armed battleship, or even an entire navy. Many of the boys whose attention has been turned to these models have already utilized their ingenuity and have constructed for themselves one or more modern-type war vessels. These ships may be of two kinds—wooden or pasteboard, and can be easily put together. In addition to the fun which may be had in making your own navy, and the natural pride which will follow its completion, the builder may follow his inclination ward of the center of the ship, and in a parallel line two inches apart. The whistles can be made of small pieces of wood, one-half the circumference of a lead pencil, and are to be fastened against the smoke-stacks, toward the front.

A third turret, one-half the size of the others, is to be fastened at the forward end of the top of the cabin; this is the captain's conning tower. Small turrets may also be fastened to the deck opposite the rear companionways and the guns arranged so as to point outward at right angles with the length of the vessel. The davits, for holding the small boats, can be made of large hair pins or wire and are to be fastened to the top of the cabin on either side of the rear mast; the davits should be about three inches high.

The mast, or military towers, can be made of heavy pasteboard (the cover of a pill box would answer) and must be fastened to the masts about two-thirds from the deck surface. The masts should pass directly through the center of the bottom of the towers.

The rigging of the war vessel consists of a rope ladder on either side of each mast running from the military towers to the outer edge of the main deck, and widening as they approach the deck. These ladders may be made of three strands of heavy string an equal distance apart; the steps can be made of heavy thread tied to each of the strands; they should be about half an inch apart. The other ropes in the rigging can be seen in the picture of the ship and can be made of heavy string.

The ship being completed, the next step is to paint it properly. If possible a colored plate should be secured to guide this important part of the work. A good rule to follow is:

The hull and the railings and davits white; the deck, masts and cabin and turrets a dull yellow; the rigging, smokestacks and cannon black. The effect of the model will be heightened if the under side of the hull is painted red, from the keel about four inches upward. The flags to be used on the ship

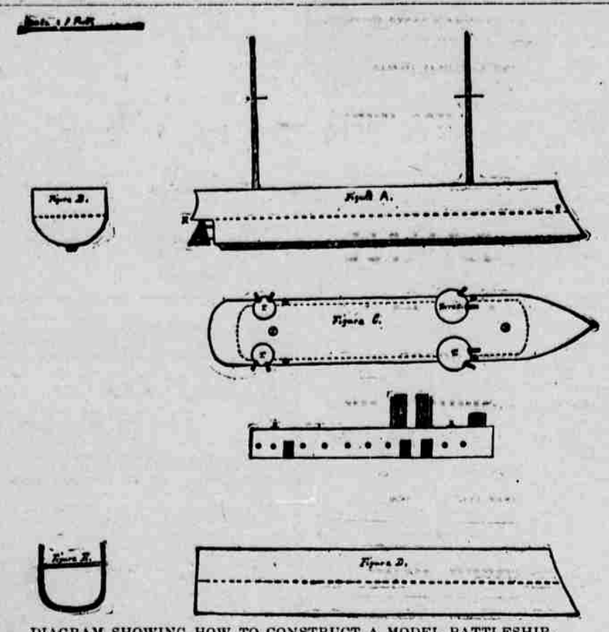

DIAGRAM SHOWING HOW TO CONSTRUCT A MODEL BATTLESHIP.

in that he can produce a model of whatever ship he desires; be it a battleship, cruiser, gunboat or torpedo boat. A few suggestions about the construction of a miniature war vessel may be of interest to boys in general.

The more popular models of naval ships are those made of wood, both because of their stability and from the fact that they can be floated in water. The first requisite in the making of a ship is the hull, or body of the vessel. For this the best material is a block of soft pine, free of knots and with the grain running lengthwise with the ship. The length of the hull can be made to meet the desire of the maker, but the most convenient is from two to three feet. The smaller the ship the more difficult will be the work.

THE MAIN BODY OF THE SHIP.

Having secured the block of wood for the hull, a sharp jacknife, a plane, a chisel and a piece of sand or emery paper (for smoothing) are all the tools necessary for beginning the work. Having at hand the wood and tools, the former should be shaped in accordance with the lines of the cruiser or battleship which it is to represent. It is wise to procure a picture which may serve as a guide (one can be obtained from almost any of the current magazines.)

Draw with a lead pencil two parallel lines lengthwise along the bottom of the block of wood and in the center. With the knife cut carefully along each outer line, leaving a ridge about a sixteenth of an inch wide and an eighth of an inch high; this will be the keel of the vesel. From the keel upward carefully cut the block, being sure to keep the contour of the sides equal, that the hull may ride evenly. In figure B can be seen the shape of the hull, which is rounded outward from the keel to a point three inches below the deck surface.

Having finished the sides of the hull, begin at a point eight inches from one end of the block and cut the wood evenly in a straight line to the end, carefully rounding the corner which marks the turn from the side toward the end.

Beginning at the keel, cut the now narrowed end upward as shown in figure A. This will form the bow of the ship. For the stern follow the directions used in the shaping of the bow, except that, having cut the block toward the end instead of drawing the knife upward at an angle, shape the wood as is shown in figure A (x). Having followed these directions, a side view of the hull will bear a resemblance to figure A, the curve downward beginning at the dotted line. When the shape of the hull is completed a free use of the emery paper will give the necessary smoothness. As much of the beauty of the ship depends upon a uniformity of smoothness in the hull, no pains should be spared to accomplish this end.

The outside of the hull being formed, the next work is to fashion the deck, as shown in figure C. Having carefully leveled and smoothed the surface with the plane and emery paper, with the chisel hollow out the wood to the depth of half an inch, following the dotted line. At the points marked O cut an opening, a third of an inch wide, from the top of the ridge thus made to the new surface of the deck; these will form the companionways of the ship. At the points marked X (in figure C) cut or bore a hole half an inch in diameter and half an inch deep; these are to be used for the reception of the masts.

FURNISHING THE SHIPS.

The main body of the ship being completed, the next step is to make and set the masts, which can be made of soft wood, and when finished should be about a foot high and three times as large around as an ordinary lead pencil. The masts may be glued in the holes. The turrets, or conning towers of the war ship should be securely fastened to the deck directly opposite the openings made at the forward O, one on either side. The turrets can be cut out of wood, or, what is better, a wooden or pastboard pill box, two and one-half inches in diameter can be used. Two port holes must be made in each turret, so that the guns will point toward the bow of the ship; having made the port holes, glue the cannon (which can be made of an ordinary black lead pencil) in the holes so that about an inch of the cannon will project beyond the surface of the turret.

The cabin of the ship can be made of a single block of wood, and when finished must be three inches high by four in width. It should be firmly fastened to the deck, beginning at a point opposite the turrets and running back to within three inches of the stern. Holes must be cut in the cabin through which the masts can pass; leave a space of two inches between the sides of the cabin and the edge of the deck. (It will be well in arranging the deck works that the builder consult the picture of the ship which he wishes to represent.) The cabin being secured in place, the doors and windows can be painted to correspond to those seen in the picture.

SMOKESTACKS AND RIGGING.

The smokestacks, which are four inches high by an inch in diameter, should be fastened to the top of the cabin a little forcan be purchased at any toy store for a few cents.

The directions given above are for a ship two feet and a half long.

HEROIC RESCUE.

A Tragic Incident in the Career of Admiral Sicard.

Misfortune did not visit Admiral Sicard for the first time in Havana, relates the Illustrated American.

The sinking of the Maine was not the first loss of a ship under his command. Twenty-eight years ago he was the central figure in a wreck not less tragic and perilous than that of the noble cruiser that now lies at the bottom of Havana harbor.

In the latter part of 1870—I tell the story as one of the survivors lately told it to me—Admiral Sicard, who held the rank of commander, with command of the Saginaw, a fourth-rate steamer, carrying ninety-eight men and officers, was sent to the Midway islands in the Pacific ocean, a ten days' run southward from Honolulu, to deepen the bar there and remove obstructions in the channel. Seventy miles to the westward of the Midway islands is Ocean island, a mountain peak rising three and a half miles above the water, and on this bleak and barren rock Sicard's vessel was wrecked on the morning of October 29, 1870, all hands being sent whirling through the breakers and counting themselves fortunate to get ashore without the loss of a life.

The first news of the wreck of the Saginaw came to this country from the American minister at Honolulu, and he received his information from a tragedy that was enacted on one of the Hawaiian islands. In the early morning of December 19, 1870, a whaleboat belonging to an American man-of-war was thrown upon the beach among the breakers that wash the shore of the Island of Kauai, most westerly of the Hawaiian group. Soon a sailor was seen struggling with the waves and was cast upon the beach. A little later the bodies of several men floated ashore.

A month and a day before the whaleboat, a tiny craft, less than thirty feet in length, had left Ocean island to seek relief for the Saginaw's shipwrecked crew. In the boat were Lieutenant J. G. Talbot, than whom no braver ever wore the blue, and four sailors. Tossed for thirty-one days on the mighty swells of the Pacific, losing a sea anchor, oars and square sail, with Lieutenant Talbot for a time sick nigh unto death, the boat's crew at the end of a voyage of upward of 1,000 miles sighted the Island of Kauai, and when almost ready to spring upon shore, with hope for the future rising in their boats, their boat was caught in the breakers and all perished miserably save William Halford, the coxswain.

Four days after the rescue of Halford he reached Honolulu and told his story to the American minister, who at once dispatched a fast-sailing schooner and a steamer with rations, clothing and medical assistance to Ocean island, where Commander Sicard and ninety-two officers and sailors were anxiously waiting relief.

The Saginaw left Midway island on October 28 and Commander Sicard resolved, before shaping his course for Honolulu, to touch at Ocean island and see if there were any shipwrecked persons upon it, the place being remote from the usual track of vessels. Next morning, as before stated, the steamer struck a reef and the ship's company barely escaped with their lives. From the first it was clear to all that starvation and death were ahead of them unless succor should shortly come, and so on November 18 Lieutenant Talbot and four men, selected to undertake the trip because of their excellent physical condition, left Ocean island in the whaleboat to seek relief.

Following Talbot's departure, Commander Sicard, who had found by taking a reckoning that he was more than 1,000 miles from the nearest inhabited land, set about building a flat-bottomed schooner, forty feet in length and twelve feet beam. She was ready for planking when the relief steamer Kilauea, sent out from Hawaii, hove in sight on the morning of January 3, 1871. One old buck-saw and a rip-saw were all the saws on hand to do this work, but it kept the crew stout-hearted and gave them something to employ their minds.

The Kilauea and the schooner Koona arrived at Ocean island on succeeding days. All hands at once went on board and on January 14 reached Honolulu, departing a fortnight later for the United States. A court of inquiry found Commander Sicard blameless for the loss of his ship. Coxswain Halford, for his part in the voyage to Kauai and his service in conducting a rescuing party back to Ocean island, was made a gunner in the navy. The boat in which he and his comrades passed thirty-one trying, heroic days is preserved at Annapolis, where there has also been erected a monument to the memory of the latter bearing the inscription:

Greater Love Can No Man Show Than to Give His Life for His Friend.

THE FIELD OF ELECTRICITY

Facts About the Electrical Equipment of a Submarine Terror.

PERFECT SYSTEM OF STORAGE BATTERIES

Compact Review of Recent Progress in the Domain of Electricity—Possible Blindness from Arc Lights.

Electricity will play an important part in naval engagements. The electrical equipment of modern war vessels ranks in importance next to steam power and armament. The only vessel in which electricity is the sole power is the Holland submarine torpedo boat now undergoing tests preliminary to its purchase by the government. The details of its construction have been skillfully concealed from prying eyes, and the exact interior arrangement is known only to those who have been concerned with her building. The Electrical Review of New York, however, has been able to secure the following facts regarding the electrical equipment of the Holland:

The boat is about fifty-six feet long, and resembles a cigar in shape. The boat is propelled by a single screw, and the means adopted for controlling direction and speed when under water are at once simple, ingenious and effective. The Holland's armament consists of an eighteen-inch torpedo expulsion tube opening at the bow of the boat. Three automobile torpedoes are carried aboard There is also an eight-inch aerial torpedo gun which will throw an eighty-pound dynamite shell over a mile and one-half. Pointing aft is a submarine gun capable of discharging an eighty-pound dynamite shell 800 yards under water with a high velocity. These guns are all operated by compressed air. There is room on the boat for twenty dynamite shells. A crew of five men is required to operate the Holland, and the boat's chief value, it is expected, will consist in its ability to discharge its guns while submerged. The normal speed of the Holland is nine knots an hour for six hours, with an expenditure of fifty horse-power, although on spurts the speed can be increased to twelve knots for short periods of time.

So far no successful plan for running a submarine boat by any other means than the electric current has been successfully employed. The compactness and effectiveness of the storage battery system installed on the Holland may be understood when it is stated that to store enough air to operate such a boat would require apparatus weighing at least six times as much. Besides this the pneumatic system involves numerous mechanical difficulties and a much lower efficiency. The electrical equipment of the Holland is chiefly remarkable for the amount of power developed from the apparatus contained in a limited space. Everything concerning the operation of the boat has been refined to a minimum, and this is especially true of the electrical devices.

STORAGE BATTERY SYSTEM.

Current for the operation of the boat is supplied from a storage battery composed of sixty special-type chloride accumulators manufactured by the Electric Storage Battery company of Philadelphia. These cells are built solidly into one compartment fifteen feet long, six feet wide and thirty inches high. The weight is so distributed that the batteries are held firmly in any position and cannot be thrown out of alignment or crushed by their own weight. The storage battery compartment is located about the center of the boat and is bounded on each side and below by compartments containing water ballast, and is covered with a deck.

The total battery weight is 45,000 pounds, and the cells are capable of discharging 500 amperes per hour for six hours. On spurts of speed lasting for about half an hour the discharge rate may be increased to 1,000 amperes per hour. The battery cells are constructed of steel, lined both inside and outside with lead. The plates are secured in the cells against any possible motion, and the cells are firmly secured in the battery compartment. The cells are constructed in such a manner that the boat can roll or pitch twenty-five degrees without spilling the electrolyte.

The batteries are charged by means of a gasoline engine and dynamo set. Charging is done only when the boat is on the surface of the water. An arrangement of special gearing permits the fifty-horse-power Otto engine to run the dynamo or to turn the propeller shaft in case of emergency. If the boat were running on the surface, the gasoline engine is capable of operating it for 1,000 miles at eight knots an hour with the amount of fuel carried. The dynamo is a special machine, constructed by the Electro-Dynamic company of Philadelphia, and has two commutators and a double-wound armature. The normal capacity of the machine is fifty horse power. Its weight is 3,500 pounds and the armature speed is 800 revolutions per minute. The dynamo is capable of being overloaded to 150 horse-power for two hours at a stretch without an excessive rise of temperature.

The other electrical apparatus on the Holland consists of a ten horse-power motor used for running a seven horse-power Ingersoll & Sargent air compressor, which is capable of supplying to the storage reservoirs thirty cubic feet of air at 2,000 pounds pressure. This motor is also used to operate a bilge pump. A one-half horse-power motor is used to ventilate the boat while submerged by forcing the foul air out into the water, its place being taken by fresh air from the reservoirs. Another one-half horse-power motor is used to ventilate the storage battery compartment by means of a suction blower for carrying off the battery fumes during charging.

ELECTRICAL PROGRESS.

A notable feature of the electrical progress of the last year has been the awakening in England and Germany in electric railroading, and the recognition of the superiority of American plants for this purpose evidenced in the large orders for electric equipments that have come from England to this country. The Frankfort-Lauffen transmission of electric power on an experimental scale over a distance of 107 miles, which excited much wonder a few years ago, has been approached closely during the year by a prospective transmission in California of seventy-five miles, under the unprecedented commercial voltage of 30,000. Niagara has nearly doubled its power of utilization within the twelvemonth and at Massena, N. Y., a 75,000 horse-power electric plant has been started. These are startling figures. Another point remarked in the electrical record of 1897 is the largely increased number of electric motors used in printing. In one large lithographic establishment, newly equipped, no less than 140 motors of various sizes furnish power to the presses and other machinery. The electric cab has become recognized as more than a fad, and New York has ordered an addition of 100 vehicles to its electric cab service. The electric launch also is making its way, although its progress may be delayed for some short time by the difficulties of procuring current. In lighting, the inclosed arc has established its practical excellence, and phosphorescent lighting has made substantial progress. The storage battery has forged ahead in a remarkable way, especially for lighting, and in central stations the three-phase high tension system, with rotary transformer substations, gives promise of soon coming into high favor. The obtaining of electricity direct from coal has made a distinct advance, and some interesting new phases of electric heating have been entered upon. The long-distance telephone has enlarged its borders; Omaha now talks with New York; the quadruplex has extended its possibilities and wireless telegraphy, notwithstanding the exaggerated claims which have been made for it, promises to resolve itself into quite a practical system of communication, more especially with lighthouses and in marine work.

SUBSTITUTE FOR GUTTA-PERCHA.

Electricians are greatly exercised over the introduction of perchold, a new product, and a substitute for gutta-percha, the supply of which of late has shown such disquieting signs of collapse. Perchold, the invention of Dr. Napier Ford, is oil which has undergone a high degree of oxidation. Stimulated by the fact that linoleum, like many kindred substances, is oil, imperfectly oxidized, Dr. Ford experimented for many years to produce a method whereby oil could be fully oxidized, and at last he succeeded. The result is perchold. The oil is heated with litharge, stirred long and continuously, and then allowed to cool. Specially prepared tow then is dipped in it, placed in wire baskets and subjected to currents of air. The oil adhering to the filaments of the hemp becomes wholly oxidized. Under the microscope the hempen threads appear sheathed with a coating of amber. This is run through rollers and comes out as a leathery material, closely allied to, if not chemically identical with, rubber. Its tenacity is increased by mixing it with sulphur. It can be rolled as thin as a piece of tissue paper on any fabric, and it makes leather impervious to moisture, though not to air. It is said to be eight times cheaper than rubber, and more durable. One of its great fields probably will be the making of pneumatic tires. It is said that a chemical manufacturer in London, whose hydrochloric acid tank used to be lined with gutta-percha at a cost of $50, had a lining made of perchold for $1.50 which serves just as well. Perchold should be a boon to the electrician, as it never becomes brittle and never leaves the wire—two most desirable qualities in an insulator.

VACUUM TUBE LIGHT.

From time to time the various inventors who are engaged in following the elusive problem of a method of making a method of phosphorescent light available for use in the streets and inside houses give their results to the press. Some of the experiments described through this medium are very beautiful, and others are not a little promising, but so far it has been most difficult, or, to be nearer the truth, impossible to secure any figures or "curves" on which reliance could be placed, in regard to the relative cost of producing this new light, and the candle-power attained. The mere statements of a sanguine inventor go for very little; experts, and the public, too, want facts that can be proved. When a phosphorescent light plant is put up under the supervision of reputable and capable judges, and the amount of current used and the quantity of light given for the expenditure of that current is scientifically determined, people will be able to judge just how far the new light has gone toward taking the place of the arc and the incandescent lamp. While there have been no recent signs of progress on the part of inventors who have been identified with investigations in this field, a new man, John H. J. Haines, has taken up the work. Mr. Haines says that within three months his apparatus will be on the market. His vacuum tube light is pure white, and is said to be of great brilliancy. One of the leading features of the apparatus is a discharge which takes place between two pairs of brass spheres, which Mr. Haines terms a double-spark gap. The outfit for producing the light is self-contained, of simple construction, and of low cost.

BLINDNESS FROM THE ELECTRIC ARC.

Prof. A. J. Rowland advises people to be very careful in the matter of exposing the eyes to the direct glare of the electric arc light, or an arc caused by any accidental short circuit. After gazing on the intense light the eyes suffer a sort of paralysis, and on looking away one sees as through a fog. This effect soon passes away, and can usually be cured by a sojourn in a dark room for one or two hours or one or two days, according to the severity of the case. At night one notices the brilliance of the light and is on his guard, and it is in daylight that there is the greatest danger. Men who have to work near such a light in daytime should not only wear such glasses as are made for those who adjust and repair common arc lights, but use a mask covering the whole face. The light would get right around the glasses, and even if one thinks to protect himself from all direct rays by holding his hand before his eyes, there will still be likelihood of his suffering. The eye may not feel the effect of working with the arc immediately. It may be some hours before a slight scratching is noticed in the eye, as though there were some fine dust or cinders there. This is followed by a feeling of dryness on the eyeball, accompanied by a very profuse shedding of tears, and all the symptoms of a heavy cold in the head are felt. If the attack is a bad one the pain becomes a very intense aching, and may be accompanied by a twitching of the eyelids. In aggravated cases the afflicted one can bear no light on the eyeball, and if the eyes are opened he finds he is blinded. For a slight attack Prof. Rowland recommends the use of six grains of borax in a fluid ounce of infusion of sassafras pith, or ten grains of boric acid in an ounce of camphor water. The last recipe is one of the most soothing remedies for tired or inflamed eyes that was ever discovered, but Prof. Rowland thinks that the first is just as good, and possibly a trifle better. In a very bad case a physician may apply cocaine, but no one else. After a few hours the pain passes away, and by keeping in a darkened room and then wearing smoked glasses for a couple of days, applying the eye wash constantly meanwhile, the patient should be all right. He is sure to be more careful next time.

DINNER WHICH COST $300,000,000.

Yet It Was Only a Very Commonplace Meal.

Recently a man who is fond of arithmetic made up his mind that he would find out how much a dinner really cost, says the Memphis Appeal. He first ascertained that the dinner he was eating cost 75 cents, presumably. He contradicted this and then made out the following statement about the cost of that dinner:

The pepper, he said, came from 10,000 miles away. It grew on a little bush about eight feet high, which must have had a growth of at least five years. The pepper was picked green; it had to be dried in the sun, and this meant employing women. It took one ship and 1,000 miles of railroad to bring the pepper to the United States. The flour of which the bread was made came from Dakota; some one owned the land, and that meant the investing of capital, and then he had also to pay wages to workingmen. The flour had to be ground, and the building of the mill, and the plant or machinery, meant more money invested. The millers had to be paid, coopers had to be paid for making the barrels, and, of course, the wood of which the barrels were made had to be cut and sawed and shaped, and this meant the employing of more men. Then the flour had to be shipped over the railroad and handled again by cartmen before it came into the house.

The tea on the table came from China and the coffee from South America. The codfish had to be brought from Maine. Men had to be employed to catch the fish; other men and women were employed in drying, packing and boxing it, and it, too, had to make a long railroad journey.

The salt came from the Indian reservation in the northwestern part of New York state. The spices in the cake came from the Spice islands in the Indian archipelago. The canned peaches came from California, and they, too, represented the employment of capital and labor. The little dinner represented, directly and indirectly, the employment of $600,000,000 of capital and 5,000,000 men.

SOME GORMANDIZERS.

Men Who Almost Defy Their Stomachs.

Americans are eternally quarreling over the question of wine drinking, says the New York Press. Some want their claret hot, in small glasses, while others take it in pint tumblers with ice. Still others mix it with water or vichy or carbonic—a thoroughly vicious habit. In the French boarding houses in this city the cheapest clarets are diluted either in the cellar or at the table. Fine wines are sipped from small glasses, and never more than a gill is drunk. When the quarrel waxed warm at Faccini's he would settle it by the brand—that is, by cost and quality. And he is always right. His chianti must be drunk in one way, his valtellina in another, his zinfandel in another.

At Faccini's a man is permitted to eat according to his particular style and capacity. Many Italians went there years ago, and may go there now, though it is really more frequented by Americans. I have seen artists, singers, actors, writers, preachers, gamblers and poets at the same table, each eating as if he expected a famine. It was no task for some of them to drink a gallon of wine at a sitting and eat a peck of macaroni, not to mention in detail weights and measures of what might be termed accessories. A poet, when he is not poetizing, is a fearful eater—fearful of starving. Preachers come next.

A gourmet is one thing, a gormand another. Yousouf, the "Terrible Turk," eats eighteen chops at breakfast and drinks two quarts of beer. He is a belly-god. Brignoli ate a dozen mutton chops after singing at the Academy and drank three bottles of champagne. He was a gastronome. Pouyer Quertier ate a leg of mutton at a meal, with sundry vegetables, while the limit of his capacity for champagne was never reached. John H. Inman, a disciple of teetotalism, killed himself with eating. His appetite was so ravenous and his capacity for food so illimitable that he was ashamed to eat in public. New York is full of human cormorants, but those that "take the butchery" are such as Ike Frommo, Pat Divver and Mayor Van Wyck in their steak-devouring contests. All gastronomic tournaments are disgusting.