

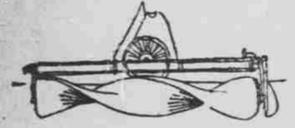
## SCIENCE AND INDUSTRY.

### USEFUL PRODUCTS OF INVENTIVE GENIUSES.

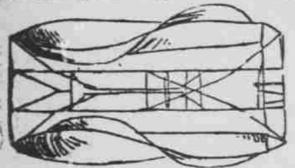
**New Aquatic Velocipede—Electric Chair for Invalids—Chain Making—A Steel Chimney—Dr. Nansen's Polar Ship.**

#### A New Aquatic Velocipede.

A German inventor considers that he has at last solved the problem of rapid propulsion through water by the aid of muscular power, and so great is his belief in the efficiency of the aquatic velocipede shown in the



**SIDE VIEW OF AQUATIC VELOCIPED.** Two accompanying views that he has asked the leading governments of the world for the exclusive right to manufacture and introduce the apparatus. As will be seen from an examination of the illustrations, the device has much the appearance of an ordinary life raft. The screw propellers extend the entire length of the arrangement on each side of the seat of the rider and are designed to offer the least possible resistance to the motion of the waves and yet develop the maximum of



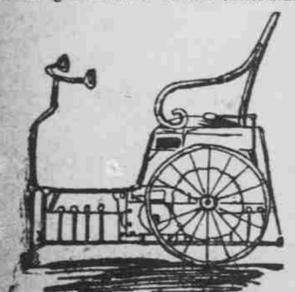
**VIEW SHOWING THE PROPELLER.** power. The revolution of the foot wheel is transmitted to the propellers by suitable mechanism, the power being multiplied as in the road cycle. While it is not certain that this latest production of German ingenuity will prove as valuable as is expected by the inventor, the Philadelphia Record thinks it nevertheless possesses many novel points not common in water craft of this character.

#### Dr. Nansen's Polar Ship.

Dr. Nansen's polar ship has progressed so far in construction that one can now form some idea of its general outline, says the Folkebadet of Christiania. The slanting sides strike the eye at once. Under the supposition that the vessel will be "screwed" by the ice, care has been taken that no projecting points or flat surfaces exist. The peculiar design is based on the anticipation that all ice, when meeting the vessel will be forced down under it, allowing it to be raised so much out of the water. For the same reason the bottom of the vessel is covered with hard and smooth wood—greenheart, three to six inches thick. Inside the vessel is provided with horizontal, vertical and diagonal cross beams, fastened by hundreds of iron and wooden joints, giving the impress of great solidity. The frame mostly oak. Besides the outermost covering of greenheart, there are two oak skins. The vessel is provided with a steam engine of 162 horse power. It is rigged as a three-masted schooner and will mainly rely on its sails when in the ice. Its dimensions are: Keel, 31 meters; greatest length of deck, 39 meters; greatest width of deck, 11 meters; height from keel to deck, 5.25 meters; when loaded, 4.75 meters; displacement, 800 tons. The hull will be extremely heavy on account of the heavy material used in its construction, yet it is estimated that she will be able to carry 400 tons of coal and provisions, etc. Besides the smaller boats necessary for reconnoitering, etc., two large boats are being built able to hold crew of twelve men and provisions for three months. If the polar currents are running as Nansen supposes, it becomes reasonable to expect that his expedition will meet with success. His vessel is certainly a marvel of solidity.

#### Electric Chair for Invalids.

Captain Alexander Johnson, of Washington, who is now visiting his mother in Pittsburg, says the Dispatch of that city, has invented an electric invalid chair, a model of which is now running in Baltimore. The chair is mounted upon a case which contains the motor and storage cells. The guiding apparatus is like that of an ordinary low seated tricycle, and at one side of the seat is a lever connected with a resistance box for controlling the motor. At the other side



**CAPTAIN JOHNSON'S ELECTRIC CHAIR.** of the chair is the brake handle, which is an ordinary lever friction brake. The motor is wound for a low E. M. F. and is of the slow speed design, connected to the driving shaft by a single reduction gearing. Captain Johnson gives the following details of this chair: "Five and one-half am-

per hours to each pound of weight. Speed, eight miles an hour for five hours, though at lower speed battery will last for fifty miles of travel. Total weight, 150 pounds."

#### A Steel Chimney.

One of the most notable achievements in the multiplying applications of steel to structural purposes in this country, says the American Exporter, is the erection of a steel chimney, the dimensions as given being a height of 250 feet, with an outside diameter of 9' 5", while the steel varies in thickness from 5' 32" at the top to 1" at the bottom. The lower 75 feet of the chimney is lined with firebrick 8 inches deep, formed to fit the shell compactly all around, and above this is lined with hollow tile. This lining is supported at intervals of 25 feet by an angle iron riveted to the steel shell—that is, the chimney is lined in a manner similar to blast furnaces and foundry cupolas, no expansion by heat being able to lessen its strength, and the joints are all hot riveted. The steel shell is carefully protected from corrosion and from any attacks by the weather by painting inside and out. The weight of the chimney is spread to the foundations in the same manner or general way as that of the columns of the building, the base or foundation on which it rests being constructed similarly. The ground, first, is covered with a layer of cement, then two layers of steel rails in cement and one layer of I beams, on which the cast-iron shoe which takes the shell of the stacks rests. The capacity of the chimney is twelve 60" boilers, 20 feet in length. The outside diameter of this chimney is 9' 5", while were it constructed of brick it would be 16' 6".

#### Chain-Making.

There are comparatively few trades in which machinery has not to a greater or less extent superseded manual skill. Chain-making is one of these survivals, and in that industry the cunning workman is still master of the situation. Although many machine-made chains are used, they are not equal to the hand made article, the chief point of inferiority being the welding of the link. For this work no device has yet been found which will take the place of the strong and flexible wrist of a proficient workman. But the work is extremely hard and exhausting, and six hours of it constitutes a good average day, even for a robust chainmaker. The wages are from \$3.50 to \$4.00 a day; but comparatively few native Americans, it is said, are to be found among the members of this craft. The majority are Englishmen, and in their own country they begin to learn the trade, in many cases, at seven years of age. It is a singular fact, considering the nature of the employment, that not only boys but girls of tender age are taught chain-making and follow it for a livelihood, the chains made by women being of the lighter class, with small links. For the heavier descriptions of work a very high degree of heat is required; and it is the exposure to this high temperature which tries most severely the constitution of even the most vigorous workman.

#### An Electric Spring.

In many parts of the world are "mineral" springs which are supposed to have wonderful life-giving properties. Ponce de Leon explored Florida in search of a spring of eternal youth, and the waters of some other springs are supposed by many persons to be hardly less wonderful than Ponce de Leon's spring would have been had he found it. The Electrical Review describes the latest device for working miraculous cures by means of water. "It was but a plain mineral spring, but the cups that the patients drank from were fastened by a brass chain to an iron bar which enclosed the mouth of the bubbling spring. "You were prevented from coming too close by another circular iron railing about eight feet across. The ground around the spring was naturally moist, and it was either this ground or the iron which was one of the ends of an open electric circuit. "The cup held by the chain was the other end. "The person drinking simply completed the circuit through the body, and when he had finished, the attendant kindly and immediately removed the cup from his hand. "The drinkers always felt that 'delightful tingling sensation,' and rejoiced that they had found the fountain of youth. Some imagined they even felt the new blood coursing through their veins. A small induction coil ingeniously concealed and connected with the cup and railing was a cheap method for producing that 'invigorating feeling.'"

**What Suggested the Waterphone.** Photography of the heavens has revealed stars invisible to the naked eye or through the telescope and now Mr. Edison is thinking of a phonograph to catch sounds unheard by the human ear. Once captured by the wax cylinders of the phonograph these sounds will be returned to the listener intensified to a degree sufficient to make them easily audible. In the matter of inventions it is a curious fact that Professor Bell's latest device of importance, the "waterphone," for locating leaks in water-pipes, was suggested to him by observing a plumber's apprentice endeavoring to find a leak by means of a small steel rod which he held in his mouth and touched against the pipe.—New York World.

#### Unfavorable Sign.

Chopson—Hey? What? Rain all next week? How does anybody know? Who says so? Stake (sad but firm)—I do. I've arranged to have my house painted next week.

## THE WORLD OF WOMEN.

### MATTERS OF INTEREST TO THE FAIR SEX.

**Nobility of the Wage-Earner—Calling a Halt—The Athletic Girl—An Attractive Screen—For Dainty Bedrooms—A Dainty Housewife.**

#### Nobility of the Wage-Earner.

There is nothing that makes a woman so distinctively shoddy as to have her look down upon a sister woman simply because she has to earn her own living. The well dressed, elegant-looking female who draws her silken skirts away lest they might come in contact with the poorer garments of the shop or factory girl may not be one whit more deserving of good fortune than her less favored neighbor.

Absolute necessity makes a woman start out into the world to earn her own way. It is not a pleasant prospect whether she be young or old, having once enjoyed riches, or dependent on her own exertions to gain the only comforts she ever has experienced, in either case it is a hard struggle. Women are not built for warriors in so unequal a struggle, therefore when circumstances compel them to take up the burden on their own frail shoulders encouragement instead of reproach should be their portion.

It does not argue that because a woman stands behind a counter all day, or clicks away at the ivory keys of the typewriter, or even presides over our kitchen, that she has not as good blood in her veins as her more famed sisters. She may have sprung from a race of kings. Her ancestry may be the proudest in the land, yet the elusive dollar may have hid itself away to the coffers of some person who knows not their own grandfather, and the plucky American girl finding that one cannot live on the memory of what has been, turns to with a courage that nine times out of ten insures her success notwithstanding the withering looks of Mrs. Shoddy and her ilk.

The latter lady, however, had better remember that riches, alas! have wings and there may be a day when her own proud self or high and mighty daughters will find it compulsory to fraternize with the people whom to-day they regard with disdain. When that time comes they will be wonderfully surprised to find that there are so many real ladies of birth and breeding among the ranks of the world's wage-earners.

#### Calling a Halt.

"I cannot imagine why I am so tired all the time. It seems to me that I do very little," said a woman, dragging herself to a chair and sitting down wearily.

"How many times a day do you go up and down stairs?" inquired a friend. The house was in the city, high and narrow, with four long stairways, three of which intervened between the kitchen and the mother's "own room."

"Why not very often; I don't know. I have a good many errands about the house, here and there, and my impulse is usually to wait on myself. I suppose I spend a good deal of strength on the stairs, now that I think of it."

"And, pardon the suggestion, but you are always looking out for others so much and so generously, that others ought to look out for you; have you ever thought how often you are interrupted in the progress of a day? The ordering of the house is the first thing, but some trifle is forgotten, pepper or salt, flavor or seasoning, and you are consulted about that. Then your big boy comes to you with his necktie and his cuffs, and your four-year-old has pinched his finger, and needs comforting; your daughters have no end of affairs in which you must be the counselor, and your husband leaves the weight of his perplexities and the irritability that grows out of his overwork on your ever-ready strength. Dear, it is not wonderful that you are tired! The wonder is that you rest so soon, after a nap, or a little time by yourself, coming out to the family made over again."

"But what can I do? All that you mention forms a part of the every-day duty of a woman like myself, whose main work in the world is to keep her home happy and comfortable."

"Once in a while you might call a halt. You should pack a little bag, and run away for a three day's visit, leaving the housekeeping to the young shoulder, which will find it only a slight burden. It is an imperative duty, occasionally, to take care of one's capital, if one be a wife and a mother. In the interest of the rest, for the sake of the day that are coming, a matron must be provident of her own health, not suffering herself to drift into nervous prostration or wearisome invalidism."

There are graves not a few over which the inscription might be written: "Here lies Mary—the beloved wife of Theodore—tired to death." And in most cases the blame is not Theodore's, but Mary's own. She should have called a halt in time.

#### For Dainty Bedrooms.

For dainty bedrooms there is absolutely nothing so pretty and desirable as chintz, but as its beauty consists in its freshness, it is highly essential to choose a crezone that has fast colors and can be laundered. For that reason well-fitted slip covers are better for a bedroom than those that are regularly upholstered. Curtains, allance for the bed, and a comfortable chair and sofa may all be considered when buying chintz for a room. Bureau covers are often made of chintz also, and very pretty they are with pin-cushion and toilet bottles to

match, making a particularly good equipment for a guest room. And just here we might suggest that if a little girl wants to make an acceptable and useful present for her mother for Christmas she could not do better than to cover pin-cushion and toilet bottles with fresh chintz and to make a bureau cover to match, either for her mother's room or the "spare room" of the house. To cover bottles, cut a round dish, a little larger than the bottom of the bottle, and then a strip of chintz, will go once and



half again around it and is wide enough to cover the entire length. Gather it to the round bottom, trim the other edge with narrow lace and tie it around the neck of the bottle with ribbon one and a half inches wide. The pin-cushion cover is simply an oblong square edged with lace, the fulness being pinned together at the corners and covered with a bow. Both the bottle covers and the pin-cushion cover have the advantage of being easily "done up." This set will be still prettier with a bureau cover to match, edged with the same lace.

#### The Athletic Girl.

Any one who has the old foggy notion that girls are frail, delicate creatures, enjoying only needlework or crocheting and in dense ignorance of all many sports, would wake up with a start if they were to find themselves at any of the inter-collegiate games these days and see the great number of women spectators who are not only interested in foot-ball because they know some men of the eleven, but a genuine appreciation and knowledge of the game.

Fierce partisans are these girls wearing the colors of their favorite team, and it seldom happens that there is one present who has in tow some unappreciative escort who volunteers to tell her the rules of the game and the good points in the play. Of course such novices do occasionally attend, but as a rule the girls know as much about the play as any man present, and are quick to applaud in their own enthusiastic feminine way a "touch-down" or a "good punt."

And what an amount of personal discomfort they endure for the sake of the athletic fad. Hands grow cold and noses blue as the chill winds sweep over the grand stand and cause little uncomfortable shivers to run up and down one's spinal column, but they stay it out, and even if they take severe cold, are just as anxious to attend the very next match, even though they are still suffering from the effects of a former one.

#### An Attractive Screen.

An attractive screen may be made with a foundation frame of an old-fashioned, two or three folding, square clothes rack. Enamel the frame in a pale tint, or bronze it. With small gilt nails, tack plush panels of the required size to the upper half of the frame. These panels may be embroidered in applique on silk. Upon the center strips of wood, which are



#### Satin Grate Screen.

between the upper and lower half of the frame, tack slightly full curtains of tapestry silk. The border of these curtains may be effectively embroidered in couching pattern with silk. Turkish toweling of the light color makes attractive panels, and may be beautifully embroidered in crewel or silk.

#### A Dainty Housewife.

She insists that the butter shall be cared for in a covered crock. The milk is not dumped down in an open pail of tin, but the sweetest of glass jars with top of glass holds the dairy supply. All fresh meat is kept above the ice. This is a rule strictly adhered to by experienced housewives.

Left-overs are given a place on a cool swinging shelf or wired cupboard. Cold cauliflower, turnips and cabbage are not allowed to taint the purity of this food receptacle. You will not find the lard straying about in a wooden platter but snugly packed into the cleanest of covered crocks. And last but by no means least is the daily baptism which is given this important piece of pantry furniture. Hot suds followed by a drenching of cold water, the increased upon wooden bars so that it will not melt, and your ice chest is ready for the day's supplies.

## NEW IDEAS IN GOWNS.

### SOME CHOICE COMBINATIONS BY WORTH.

**A Tendency to Copy Old-Fashioned Pictures—The Round Waist Holding Sway—The Hoop Skirt Likely to Reign Once More.**

The evening and dancing gowns are quite a new departure from those worn last year. All tends to the artistic, with a disposition to copy the old-fashioned pictures, even to minute details. Round waists are entirely used for evening gowns, and the greatest latitude is indulged in both as regards color and material. The combinations are described by the New York Recorder as striking, such as a gauze gown with velvet sleeves,



#### NEW DANCING GOWN.

brocades with lace and fur. A Paris model is of pink and white striped gauze over white satin. The skirt is bell-shaped in the back, with the front slightly draped. The back and front widths are held together by a band of exquisite duchess lace insertion. The round bodice is decollete, cut square, with huge short pink velvet puffs as sleeves. Around the short waist is a narrow pink velvet sash,



#### BACK VIEW.

which fastens in the back with a soft bow of velvet and lace, the ends of which are very short. With this toilet are worn pink silk stockings and slippers and gloves to match. The gloves and fans form an important part of the evening toilet. They should correspond in color or harmonize with good effect. A pretty dancing gown, with the low empire bodice, is made of yellow damask, patterned with mauve and yellow silk crepe put on a foundation of plain yellow silk. The ribbon trimmings of the crepe bodice are the same color as the flowers on the damask skirt. The bodice is gathered



#### A DINNER DRESS.

full, leaving a heading around the square neck, opening and falling over in a puff at the waist, where it is held in by two bands of ribbon, each finished off at the back with a bow. The shoulder-straps are of ribbon. A ruche of crepe trims the round skirt, made without a train. Another peculiar combination is of pink crepe with pearl colored velvet. The front of the skirt is very full, and the train is composed of the velvet, which is of the palm-leaf pattern. The bodice has side pieces of velvet, with front and back of the crepe. Sleeves are puffed to the elbow, from which falls a full ruffle of crepe. In the elaboration and eccentricity

of the bodice one is inclined to overlook the gradual but none the less decided change which is taking place in the skirt. Without being a prophet, or the son of a prophet, the New York Sun thinks it is easy to foretell that the reign of the hoop in some form is again at hand. Already little horse-hair pads are worn on the hips by extremely slender women, the bodice is growing shorter-waisted, the skirt flares ever wider and wider about the edge. Rouff, the Paris dressmaker, uses five breadths of goods in skirts. Worth's dresses have four narrow gores in the front and sides closely fit-



#### PALM-LEAF TRAIN.

ted above, with a flaring founce below, cut out in a half circle. This founce naturally forms folds that broaden out toward the wider flower edge. Three breadths slightly sloped toward the top form the back of these demitained skirts. Double skirts will probably be the next development, for already there are seen skirts composed of two flounces so cut that they are narrow at the waist and wide at the feet. Another noticeable tendency is toward widening the skirts at the bottom by means of sloping panels let in at the sides differing in color from the skirt.

**GOOD SEASON FOR MAKING OVER.** If this is an expensive year for buying new gowns it is a most encouraging time for fixing over old ones. Cut off the train of last year's dress so not more than two inches rest on the ground. Cut off the waist and hook the skirt up over it. Put in full nut-ton leg sleeves of velvet to the wrist if the dress is for day wear; make empire puffs of velvet if it is for evening use. Take a strip of bias velvet six or seven inches wide, wrinkle it to a fitted belt, leaving ends of the velvet four inches longer than the belt in the back. Fold back two inches and shirr these double ends at the edge of the belt. Make the collar in the same way. In selecting the velvet choose some striking color contrast.

#### Mothers' Mistakes.

Mothers are apt to make the mistake of regarding their time of more value than the future benefit of their daughters in the matter of domestic training. A certain lovely woman, herself a perfect marvel of domestic virtues, who could cook the most difficult dish or make her own gowns with equal facility, would reply when asked why she never taught her daughter the numerous accomplishments she possessed: "I would rather do it myself than to waste time teaching someone else. Besides, a novice spoils so much, and I cannot afford to let her ruin dress goods, or waste flour and butter for nothing."

Others argue that there will be time enough when school days are over, but in this progressive age society or matrimony claims our girls when the books are put away, and many a young woman who can sing, dance, ride and flirt to perfection brings no other accomplishments to her husband's home. She may never be called upon to exercise one of these homelier ones in person, but whether this be so or not how much better to understand the method than have to take for granted the say of servants.

A woman can only expect to govern well when she herself knows whereof she speaks. The ignorance of young housekeepers has long been the subject of many jokes, but it is not humorous; it is serious, as the trials and troubles in many otherwise happy households can testify. It may be old-fashioned, but it is an opinion backed by many husbands whose wives' helplessness has well nigh driven them to despair, that a co-operative housekeeping plan should be established from the time the daughter is able to toddle. Let her have her little duties to attend to, from filling the salt cellar; let her progress step by step through the culinary department, the management of the house, the art of entertaining and every other detail that comes into a competent housekeeper's life, and then when she is called upon to go to market or cook a dinner in her own home her husband need not have any fears as to what will be set before him or his guests, or any qualms as to the manner of its preparation.

#### Men Do Observe.

Many women believe men to be very unoberving. "Do what you will for their special benefit," said a woman in my hearing once, "and they will not even notice it. Put on a pretty frock of some favorite color, dress your hair as they like it best, it makes no difference, there's not even a word of comment." And these are opinions not confined to one woman. True, there may be some basis for the belief. Men, as a rule, notice more than they say, and I think women would be surprised if they really knew how much men do notice in their dress or their manners. They will not always tell you so; that I grant, but that is the man of it.—Ladies Home Journal.