Their Contributions to the Improvement of the American Navy.

MILLIONS SAVED TO THE GOVERNMENT Just before the war with Spain began

Sigsbee, Fletcher, Bernadou, Fiske, Hichborn and Others in the Role of Inventors-Best Smokeless Powder in the World.

on board ship, opening and closing the sides develops a high heat which soon magnetism of a steel ship's hull. Passed

turning a crank, can unlock from the breech | He conceived the idea of the double turret, INVENTIONS BY NAVAL MEN of the gun its plus, weighing 1,150 pounds, having an eight-inch turret placed on to withdraw it to the rear, and swing it clear

> Finally, Mr. Fletcher is the inventor of a rapid-fire gun, which is now the standard of the navy. His device is being used on all the three-inch, four-inch, five-inch and

six-inch guns in the service.

Secretary Long recommended to congress an appropriation to build a big powder factory for making the smokeless powder. At the same time he announced that a satisfactory that when the buoy is thrown into the water smokeless powder had been made after many the stoppers are withdrawn and when the years of experiment and that this powder was superior to the smokeless powder made the chemical with the water makes a bright abroad, "Lieutenant J. B. Bernadou showed flame. The first essential step in the modern navy special aptitude for this work and capacity | Lieutenant Very, late of the navy, devised was the construction of the modern high for the solution of the problems involved a set of signals which are now in use not power rifles, requiring in their design a high in the prosecution of experimental work of only in our pavy, but in all the navies of order of mathematical ability and an inti- this nature," said the report of the inspec- the world. Lieutenant Herbert O. Dunn in mate knowledge of the characteristics of for in charge of the torpedo station at New- vented a stockless anchor which is in use modern steel. All guns in the navy have port. This Lieutenant Bernadou is now at on some naval vessels. Lieutenants Van been designed by Prof. Philip R. Alger, a Key West recovering from wounds re- Duzer and Mason were the inventors of an former graduate of Annapolis, who has since ceived while in command of the Winslow at ingenious electric steering gear. Lieutenant been transferred to the corps of the pro- Cardenss. It was in fact Lieutenant Berna- Fiske and Lieutenant Lucien Young are the feasors of mathematics in the navy and who dou and Commander G. A. Converse, now joint inventors of a boat-detaching apis the highest authority on ordunance matters in this country, if not in the world. vented the smokeless powder just adopted vented a clinometer, used to determine the

Chief Constructor Philip Hichborn Invented the Franklin life buoy and sold it to a concern in Bath, Me. It is a selflighting buoy. Two small tin cases attached to it contain phosphide of calcium. Stoppers to these cases are attached to the ship so at \$2.50-show what is proper-these are buoy strikes the water the combination of

of a thirteen-inch turret as used on the

battleships Kearsarge and Kentucky, which

were launched not long ago at Newport

Hichborn's Life Buoy.

Prof. Alger received a diploma from the by the Navy department. The navy is angle of roll of a ship. Chief Engineer World's fair commission for his system of particularly proud of this achievement. Forgun construction, now in use in the navy.

In order to make these guns efficient der, but it contains nitro-glycerine, which methods had to be devised for handling them makes it unreliable and dangerous, and be-



OUR LEADING NAVAL INVENTORS.

der for their use, designing primers, fuses, our Navy department stayed behind Europe telescopic sights, and a hundred little ac- in the adoption of a smokeless powder until cessories used in connection with their serv- we had one that was perfect. It was also necessary to provide the Lieutenant B. A. Fiske, a prolific inventor

more powerful in their keen competition our ships. for supremacy. In this country, the home of the inventor, our government has paid little or nothing. Nearly every improvement has been invented by its naval officers. One instance of a naval officer who received compensation for an invention was that of Chief Constructor Wilson, now retired, to whom the Navy department paid \$10,000 for an air port-hinge. But most of the work

How much the inventive faculty of its keen-minded officers has meant to the Navy ! department is illustrated in the case of Lieutenant Frank F. Fletcher, now on duty in the Ordnance bureau. It was said at a hearing before a committee of the senate last winter, on a bill to give naval inventors compensation, that a gun-mount of Mr. Fletcher's had saved the government more than \$500,000. All rapid-fire guns are now placed on this gun-mount and the World's fair commission awarded it a diploma. Briefly described and without technical terms, this gun-mount is the application of ball-bearings to the upper carriage of the gun, with a hydraulic check to take up the recoil after firing and a spiral spring to return it to its place. There is also elevating and training gear of a complicated char-

Fletcher's Many Inventions.

Mr. Fletcher is the inventor of several other devices. One of these is a breech inch guns. The army has also recently These plugs were formerly handled by hydraulic machinery, but Fletch- it. Of late it has been supplanted by the er's device enabled this to be done by hand Whitehead torpedo. power by one man. So successful was the device that one man, with his left hand of improvements in mounting turret guns.

necessary appliances for using the modern in electric devices, made some years ago a have made. Their inventive talent and their automobile torpedoes to be fired from our range finder for automatically finding disships and torpedo boats; apparatus for sig- tances at sea. It is one of the most useful United States navy superior in convenience naling orders from the conning tower to contrivences on shipboard and is worth an and efficiency to those of most of the nathe guns and to every part of the ship, for immense sum to the navy. Another of tions of Europe. In fact many foreign govmeasuring the distance of the enemy, for Lieutenant Fiske's inventions was the Studi- ernments pay tribute to the superiority of counter-mining harbors and clearing chan- meter-a very clever modification of the American ideas in royalties on the invennels, and many other devices more or less sextant, by which it is possible to measure tions of American naval officers. directly connected with the ships as a fight-the distance of a ship from the height of its mast or smokestack. Still another To perfect these devices in foreign navies was a range indicator—an electrical device the governments have had to pay millions for signaling from the coming tower to the of dollars for improvements and inventions gun captain the direction and distance of from \$22 to \$50 a ton. that tended to make their guns and ships the enemy. This is fitted on nearly all

Sigsbee an Inventor. Captain Sigsbee of the St. Paul is an in

ventor. The navy now uses a deep sea sounding apparatus and parallel rulers for navigation of his invention. Licutenant Dashlell invented a breech

on all that had preceded it. It was adopted of naval officers' brains has been given to treduced on many rapid-fire guns. This device enabled the man at the breech of the gun to do with one motion what had plways taken two. In the old breech mechansm the plug had to be turned with one notion until it unlocked and then withdrawn with another motion. But by an arrange ment of cogs Lieutenant Dashiell made the verse motion of the lever drove the plug in 1897. home and then turned it until it locked. The Dashiell mechanism has been supplanted by the Fletcher mechanism, but it is still to be found on some rapid-fire guns. Lieutenant W. H. Driggs and Lieutenant Seaton Schroeder are the inventors of a rapid-fire mechanism which is of the same class as the well known Hotchkiss gun. It is applied to 1-pounder and 6-pounder guns. This invention is owned by a pri-

vate corporation, unlike most of the navy inventions which belong to the government. Commodere John A. Howell is the in ventor of the automobile torpedo, which mechanism for heavy guns. This mechanism | bears his name. Its mechanism consisted is used for handling all the heavy breech chiefly of a heavy cog-wheel made to replugs, weighing from 500 pounds to half a volve at a high rate of speed before the ton, of our 8-inch, 10-inch, 12-inch and 13- torpedo is put in the water. Commodere Howell sold this invention to the Hotehkirs company and for a time drew a royalty on

Lieutenant Joseph Strauss is the inventor

breech for loading, mounting them on car- ruins the gun. All countries have been Assistant Engineer Tobin is the inventor of riages for sighting and training, protecting working for the ideal smokeless powder con- the famous Tobin bronze, much used for the them with armor, supplying them with pow- taining no nitro-glycerine and we are the hulls of racing yealts and for the shells of der and shell, developing smokeless pow- first to get it. As in many other matters, torpedoes, and Prof. C. E. Munroe of the navy is the inventor of the high explosive

"Jovite." These are only samples of the many contributions to invention which naval officers skill in designing have made the ships of the

LAROR AND INDUSTRIES.

War has increased the price of sulphur

Production of pig tron in Germany tr April, 583,418 tons; United States, 1,000,000. The acts against the importation of pris-n-made articles into Great Britain and her colonies are being strictly enforced. Frank Phaefer has received at Norwalk,

during the railroad strike of 1894.

mechanism which was a great improvement by the Navy department in 1892 and was in- against it in the far cast. Japan is in the explorations among its glaciers and peaks field, or at least intends to enter, as a competitor.

> The National Labor Tribune, Pittsburg, states that the Bethlehem Iron company of South Bethlehem, Pa., is about to restore the cut in wages made last year when the rail price cutting began.

The Suez canal net tonnage declined 660 ment of cogs Lieuterant Dashiell made the 910 tons in 1897, compared with 1896. The Alps of Canada, in grandeur and beauty, pull of a lever turn the plug until it was British percentage of the total tonnage fell. It is, too, a region readily reached by the unlocked and then withdraw it. The re- from 71.8 in 1895 to 68 in 1896 and to 67.3

country for the importation of optum for smoking purposes. The importations last

year aggregated 121,401 pounds, and the duty of \$6 a pound amounted to \$728,406. The contract for the erection of a new steel magufacturing plant to cost \$1,000,000 made by the Alabama Steel and Shipbuilding company. The mill is to be erected at Ensley City and is to be capable

of turning out 1,000 tons per day.

The output of new shipping on the Clyde in the last five months embraces 115 casels, aggregating 169,233 tons, compared with nirety-one vessels of 120,573 tons in the same period of last year.

The membership of the United Brother-

head of Carpenters and Joiners is now ing on propositions whether or not to estabinitiation fees in all unions, uniform ish initiation ites in all unions and to make system of dues in all unions and to make the president of the organization a poid the president of the organization. The protherhood is endeavoring to bring about uniform conditions for the carpenters all over the country. Established in 1881, it has reduced the hours of labor to eight per the many cities which have eight and nine hour systems or half holidays on Saturday. By this means 12,700 of its members have 406 cities in this country and a membership efits \$21,002 has been expended in the best

Ladies' Bicycle Boots-

Every wheelwoman wants the "proper thing" in the bicycle boot-Drex L. Shooman's reputation was built up mostly by always showing the "proper thing" in foot wear-Our new boot-ten inch tops in all kid-black or dark brown at \$3.00 or the brown cloth tops made for wheeling comfort-with the regulation corrugated sole-a shoe that looks well on or off the wheel and besides they are shoes that we can recommend to you.

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Wonderful Region of Mountain Peaks and Deep Valleys in Montana.

FIELD SCIENTIFIC

Splendid Scenery at the Crown of the Continent Near the Canadian Line

-Good Pince for Mountain

Climbers and Geologists.

The northern ranges of Montana differ markedly in scenery, as in rocks, from those of the rest of the state, said Walter H. Weed of the United States geological survey telephone No. 254. Shirt Waists a a lecture in Helena. They are sharper in profile, more deeply trenched by valleys, and exhibit admirably the various phases of and glaciers. The rocks are all old and hard, thinly bedded and vari-colored, and weather detached mountain masses, rising to an ered on the rocky walls. and sembre forest-due to the heavy rain-

mountain slope wherever it can gain a foot-These northern ranges constitute a new wonderland. It is a region unmapped, and, until the last few years, wholly unexplored. O., a verdict for \$5,000 damages against the The pioneer in the field was Dr. George its railroad for "blacklisting" him Bird Grinnell, the talented editor of Forest Stream, whose designation of Ireland has long enjoyed the primacy in the region as the crown of the coninen manufacturing, but a threat has arisen timent will ever remind one of his daring while his Indian tales have given it also a reality of romance that is human in its charm. No other part of these United States offers so tempting a field to the mountain climber and enthusiast. Alpine peaks to scale, glaciers to cross and maps to make of a region unsurpassed, even by the giant traveler. The railway, with dining, observation and library cars, carries one to the San Francisco is the banner port of this threshold of scenes of grandeur and beauty he thinks of the frail snow bridges over hitherto unknown. From the car windows one obtains glimpses of the peaks and at Belton, destined to be far-farmed as the portal of the most, beautiful part of Montana, a good wagon road, for three miles through a forest only comparable with those of the Pacific coast region, brings one to the

fall-covers the valley sides and climbs the

shores of Lake McDonatd. Lake McDonald is the queen of all Mon-During the last mosth thirty-two vessels tana's beautiful mountain mirrors. Sixteen is unched from the Clyde shippards, miles long and four or five wide, with too steep to travel, and its front a slop-a tonnage of 41,584, compared with slightly tregular shores, whose narrow ribtwenty-three versels and 33,910 tons in May, bon of polished gravel separates the grace- picturesque of the many glaciers of the fully rising forest clad slopes from their region. The lecturer continued; mirrored reflections it is beautiful beyond compare.

Ladword to the Sky.

Beyond the setting of forest and lake rise bold peaks, that fower far above timber line, into the bind of eternal snows. Peak beyond peak is seen in the distance, rising to the glacier capped heights of the con tinental divide. The lake itself has neither | snow banks, that melt quickly during the rock nor swamp, Island or sandbar, to mar its beauty. It is like a well-set gem. To the geologist the lake shows its morainal and the loose stone that clatters down the It fills a mountain valley dammed lay in eighty-eight cities, not to speak of by morainal debris across its lower reaches. Geologizing in the neighborhood is, however, not an easy task. The fallen trees the and tangled undergrowth make traveling alwages in hundreds of cities, and placed fully most impossible even on foot, and, except where scoured by the streams, the rocks pockets of its members than these same men are everywhere concealed. Trails lead up received before they became members. The the main valleys, however routes long of the streams is quite different at different carpenters' union has 453 local unions in traversed by the Indians on their way east. ent times. ward to the buffalo hunting grounds. Above Montana.





-Lady attendant.

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Do You Smoke? Dese are trubelsum times fur us fel lers dat got pointed ter office-it jist seems dat as sure as we get in our graft sum feller gets us mixed up wid de korts —and den—well we're fired or yestigated did yer ever vestigate my dad's fivecent Stoecker eigar-lots of fellers have and de verdick is always de same-de best ever-fur its as good as most of de ten-centers-I gesa all dem Arabs in Juge Skots kort must be smoken de Stoecker now fur de juge ain't kiking no mbre about de terbaker dey burn.

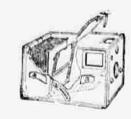


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starting on their long journey to the Guif end of the handle releases the locking of Mexico, another may be tossed to the westward to add to its waters to the Pacific cean. It is a crown set with diamond glaciers and emerald lakes-a worthy diadem for this great continent.

SOME LATE INVENTIONS.

Gas cannot escape from a newly designed universar-jointed chandelier, the joint be-ing surrounded by a metal cup which is open at the top and contains a heavy liquid to seal the connection.

A Chicago woman has patented an electri brush for bathing purposes which has the Willard's hotel, in Washington, and over-batiery in a casing in the back of the heard two men talking about war incidents. the circuit being obtained through the bristles and a contact plate in the handle. In an improved German garbage cart a

metal top is placed on the box, with gates in the sides hinged at the top to be forced nward for dumping the contents of the spring levers closing the doors buckets. automatically.

Meats can be marked without staining by a new device, consisting of raised letters attached to a wire frame, against which the most is allowed to rest until an inden-tation shows, when the meat is dried and hardened by smoke.

An improved milk pail is formed of a large can resting in a nearly horizontal so good to position in a supporting frame, with the merring." south of the can turned upward to receive while the opposite ead of the can is fitted with a sent.

Mudguards on bicycles and wagons are replaced by a new device, in which a rotary brush is mounted on an axle and inclosed in a casing in close proximity to the tire, by revelved by a gear shaft and friction lisk to scrape the mud and water from

Portieres can be swung back from a window, with a brace to support the urtain rod, the frame being covered by draping the upper part of the curtain.
An improved method of attaching the collar and tie to a shirt consists of loops formed on the collar, tie and neckband, through which a spring ring is forces, the tie and prevents the slipping of collar

A Virginia inventor has designed a selfclosing umbrella which has a number of light-coiled springs connecting the braces

Bicycle riders who smoke will appreciate newly designed pipe which has the bowl attached to a shield to be pinned on the coat, with a curved stem which makes it possible for the smoker to use the pipe without touching it with his hands.

In the raid at Catlett's station, made by

'Jeb" Stuart, says the Washington Star, as

Fitzbugh Lee and another officer entered an

officer's tent two union officers disappeared on the other side. Several years later Fitzhugh Lee was at "Yes, sir." said one, "I have always regretted those two toddies. We were just in the act of raising them to our lips when the sounds of strife outside caused us to set them down and go out the back way

just as several Johnny rebs came in

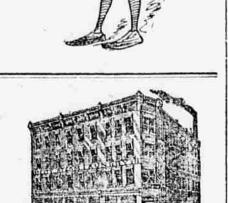
Lee looked close at he speaker. "Cousin Louis," said he, "don't be alarmed. Those toddies were not wasted. I was just in time to see you set them down. I knew you hadn't time to poison them, and as the flap of the tent bid you from sight I raised one of them to my lips-my lieutenant the other-and I declare to you." Lee added to the astonished gentlemen, "that never before nor since has a whisky toddy tasted so good to me as that one did on that frosty

Discovered by a Woman

Another great discovery has been made, and that too, by a lady in this country. Discusse fastened its clutches upon her and for seven years she withstood its severest tests, but her vital organs were undermined and death seemed imminent. For three months she coughed invessantly, and could not sleep. She finally discovered a way to by purchasing of us a bottle of and the loose stone that clatters down the rocky walls at frequent intervals during window or door when mounted on a newly King's New Discovery for Consumption, and the day supplies both power and tools for designed rod, which has a vertited rod was so much relieved on taking first dose, the door that she slept all night; and with two bothers. that she slept all night; and with two hot-ties, has been absolutely cured. Her name is Mrs. Luther Lutz.' Thus writes W. C. Mamnick & Co., of Shelby, N. C. Trial hot-tles free at Kuhn & Co.'s Drug store. Regul lar size 50c and \$1.00. Every bottle guaran-

> Dr. Strong declares that the merchandise carried by rail in the United States is double the amount of land carriage of all the other mations of the earth collectively. This means that "the 70,000,000 people of the United States transport twice as much merchandise as the remaining 1,400,000,000 of mankind."





DIRTY LINEN.

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into spires and sharp-pointed, pyramidal walls, of half a mile in height, cut in the peaks, with profound precipices and deep- flanks of peaks that seem to pierce the skies. cut amphitheaters and gorges. No part of Through the lowest notch in the wall of the America offers finer examples of the dif- amphitheater, 2,400 feet above the lake that ferent effects produced by the varying agents nestles in the hollow of the basin, a stream of erosion. To the eastward the Cordilleras has cut its way, to fall in a silvery cord to terminate in a bold wall, facing the plains, the base of the cliffs. Other lesser streams As a whole, it consists of parallel ranges and seem like gleaming silvery threads, embroid-

altitude of 9,000 to 11,000 feet, 3,600 feet. The small glaciers now found on the main above the level of the broad Flathead valley divide are the lingering remnants of an ice that lies to the west. The higher peaks sheet that once enveloped the mountains to project into the region of eternal snow, but the west, and, overriding the main divide, he timber line is about 9,000 feet, and below sent great streams pouring eastward down that a rank and dense vegetation; a dark these valleys. That is why this valley has the peculiar U-shaped bottom and the chain of blue lakes, and explains why all the valleys east of the main divide show similar characters and scenery.

I have spoken of the glaciers that are found amid the peaks of the main range Though numerous, they are not large-a few miles across, at most-but they form one of the most interesting and beautiful features of this region. They nestle in the shadows of the peaks, in the hollows on the northern sides of the divide, and nowhere do the streams of ice descend to the timber

line. Typical Mountain Glaciers.

These ice sheets show all the typical features of mountain glaciers. They show the crevassed surface of the ice, where sudden angularity of bed causes it to crack, as the waters of a stream from rapids when the stream slope is suddenly accelerated. The crevasses showing walls of clear, green ice, going down to unknown depths, give the explorer a feeling of awe and solemnity as which such chasms have been crossed. Eastward from this same glacier there

are rough mountain basins holding lakelets at the head of little St. Mary's river. These lakelets occupy hollows or bowls in the solid rock, scooped out when the great streams of ice poured over the divide from the west in a series of ice cascades. One glacier, named for Mr. Grinnell, was

shown in one of the views. Its surface is too steep to travel, and its front a slop-The Alpine scenery is perhaps more strik-

ing in its ruggedness when these deeply cut basins are not ice filled. This is shown in Pyramid valley, a type of the erosion above timber line, near the Canadian boundary. The name "valley" seems too tame a term to apply to such a rugged topographic feature. The feaming streams, fed by the middle of the day, erode rapidly, for their dope is steep and the debris of avalanches the tire rapid erosion. These streams vary in volume from day to day, and hour to hour. At storms or snow showers occur at all seasons, and the nights are keen and frosty, even in mid-summer, so that the volume

Looking eastward across the ice of Grinof about 46,000 and pays a death benefit of the lake a small tributary of McDonald nell glacier and down the valley of Pelly creek heads in a deep bowl, that is known river, the region seems well worthy of the bility of one of its members. In these benwaters before us pass into the Arctic, a and the slide on the handle to force the It is enclosed by almost perpendicular snowball can be thrown into loy streams latter down as about as a button at the lower