

The Opening of the Greatest of All World's Fairs

WHEN President Roosevelt, sitting at his desk in the White House, on April 30 at noon, St. Louis time, pushed the button which starts the machinery of the great world's fair of 1904 he will set in motion a miniature world which symbolizes the complex activities and marvelous accomplishments of twentieth century civilization.

The principal ceremonies incident to the formal opening of this latest and the greatest of world's fairs will be held at

tract fourteen states and territories have been carved. Even the smallest and least populated of these subdivisions is now worth much more than the price asked by Napoleon 100 years ago for the entire vast domain now forming so important a part of the republic.

Gathered within the scope of vision from the point where these exercises are to be held are several hundred structures, many of them most imposing and beautiful, created so that here the nations of the world may display their progress and take part in the commemoration of an event which resulted in spreading the sway of liberty from the Atlantic on the east to

stage by reason of her war with Russia, has spent \$1,000,000 in spite of her enormous war expenditures in order to be among the nations here represented. Although one of the smallest world powers is fighting the largest world power, the little kingdom of the Pacific may be said to be leading all the nations in her display at the St. Louis exposition. She asked for more space than any two other foreign governments combined and secured an allotment nearly equal to her demand. Her exhibits are outspread in nearly every one of the great exhibit palaces.

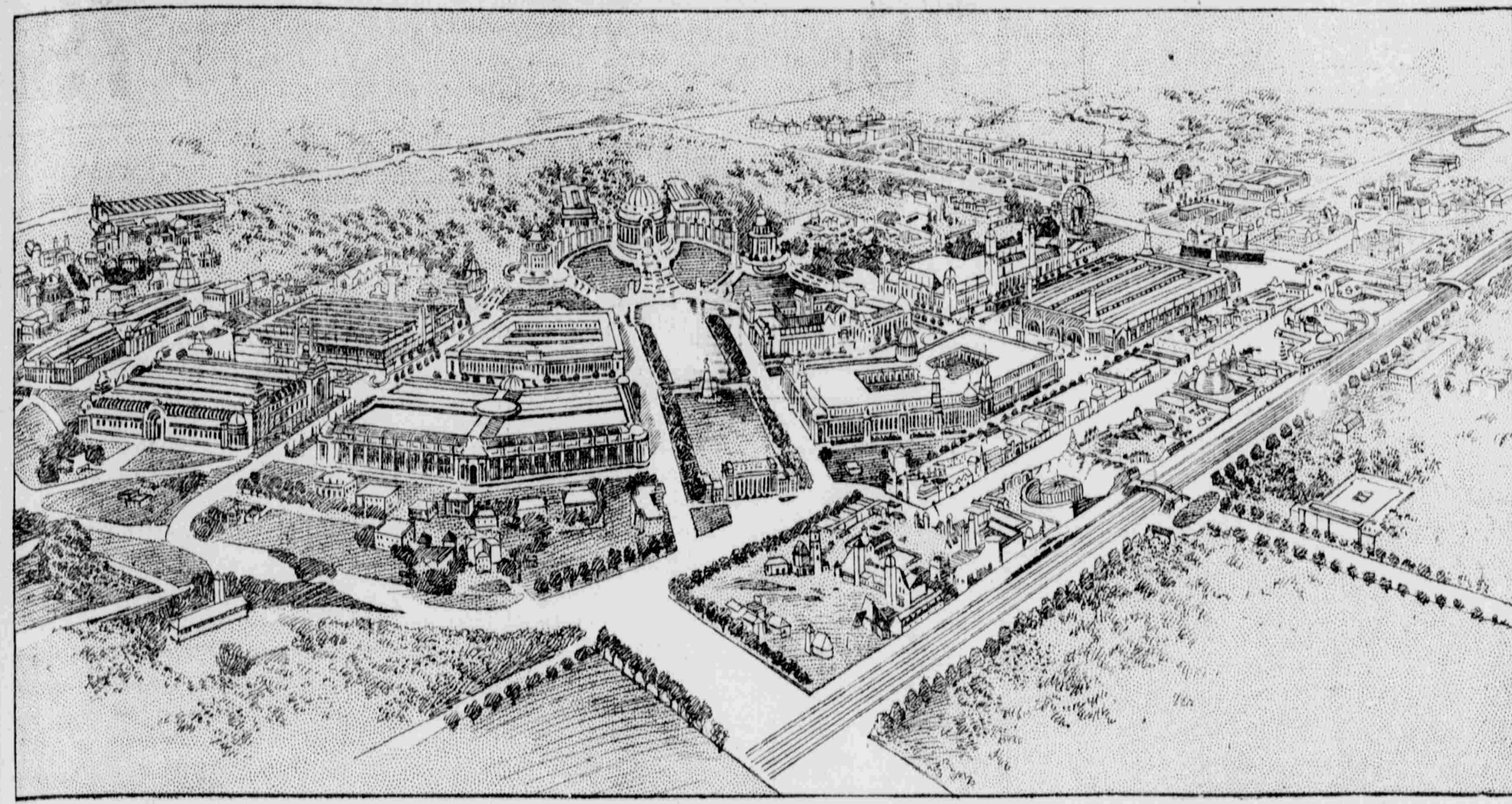
Standing at the foot of the lofty Louisiana purchase monument, designed by

ment at a cost of \$500,000, which is pronounced to be the most imposing and architecturally meritorious of any exposition building ever erected by the United States government. It stands on the slope of a hill, commanding a fine view of the whole world's fair city. Not far away to the southwest is the beautiful Government Fisheries building in the style of a Pompeian villa. Still higher up the slope on which the government building stands is the state building of Missouri, one of the most imposing and elaborate of all the structures on the plateau of states. This plateau extends for a half mile to the southward, and here most of the

And yet there is still an exceedingly important part of the exposition to be visited—the vast Agricultural building, 1,600 feet long; the Horticultural building, Forestry, Fish and Game building, refrigeration plant, the large tract devoted to the Philippines display and the many out of door ethnological exhibits, not to mention the live stock display, the camping grounds, the New Jerusalem, Fraternal temple and the hundreds of interesting things on the Pike.

It is indeed a vast enterprise, covering nearly twice as much space as the great World's Columbian exposition at Chicago and nearly four times as much as the Paris exposition of 1900, and yet it is not on the score of bigness that the Louisiana Purchase exposition makes its appeal to the public. It is going to be worth going to see and worth making quite a sacrifice to go to see because it is to be so beautiful and so instructive. It is an exposition of life and motion, of processes, of things in the making as well as made, and for this reason is quite different from all expositions of the past. It is the latest and best exemplification of the world's progress in all the fields of art and industry. It is an education in art and science and industry, a university for the people and at the same time provides a multitude of things that are full of delight and fascination. By day it is a picture upon which the eye loves to dwell. By night, with an illumination far surpassing in novelty and beauty anything before achieved, it is a fairyland itself. But words are weak when it comes to picture such scenes. Some one has said "See Naples and die." It were better, far better, to see the world's fair at St. Louis and live years afterward to enjoy in memory its inspiring visions of beauty.

ARTHUR W. CEPHAS.



BIRDSYE VIEW OF THE LOUISIANA PURCHASE EXPOSITION GROUNDS AT ST. LOUIS.

the base of the splendid Louisiana purchase monument. Here Robert R. Livingston, James Monroe and Napoleon's minister, Marbois, reproduced in the most lifelike manner by Sculptor Karl Bitter, will look down upon the scene from the position on the north side of the monument where they will be grouped. These statements of 100 years ago, brilliant and far-reaching as they were and much as they valued the territory transferred from France to the United States by the signature of the Louisiana purchase treaty, could not in their wildest dreams have imagined the change which a century would witness. The price asked by Napoleon for this territory was \$15,000,000, and here a century later come hundreds of thousands of people to witness the opening of an exposition of worldwide extent, costing as a whole in its production from three to four times what the United States paid for the original territory of Louisiana. Out of this great

the Pacific on the west. The United States, originally comprising but thirteen commonwealths, has broadened its domain beyond the fond imaginations of patriots and statesmen who participated in the foundation of the government. Fifty-one states, territories and possessions are represented in the exposition which celebrates the first great step taken in the expansion of the borders of the United States. More foreign nations have joined in this assemblage of displays from all over the world than ever before took part in a similar enterprise, while Japan and China, the two greatest nations of the orient, are represented on quite an unprecedented scale. In fact, China's exhibits at the St. Louis world's fair—her first official representation in any universal exposition, by the way—are in themselves worth crossing the continent to see. Japan, that wonderfully energetic nation which now occupies the center of the international

Emanuel L. Masqueray, with its sculptural figures and groups by Karl Bitter, and looking to the southwest one sees a majestic domed structure flanked by a noble colonnade crowning the brow of the hill which closes the view in that direction. In front is a series of cascades profusely adorned with crests from the skilled hands of renowned sculptors, all adding to interest the sentiments and emotions which seek for expression on such an occasion as this. In the center of the colonnade the Hall of Festivals, with its classic columns, its sculpture carved in stone and its many appropriate plastic decorations forms the key-note of the grand and beautiful composition. Extending on either side and terminating at each end in ornate pavilions, the semicircular colonnade, with its fourteen seated statues, emblematic of the states and territories of the original purchase, typifies the importance of this victory of peace and ex-

Electricity on either side, as well as the Terrace of States and Festival hall, the latter rising to a height of over 200 feet upon a hill in the background of the picture. Behind the colonnade stands the Palace of Arts, erected at a cost of over a million dollars and containing treasures of painting and sculpture worth many millions more.

Now let the spectator turn to the northwest, facing the city of St. Louis, where this splendid commemoration of a great event in history is to be held. He looks across the plaza of St. Louis, on the farther side of which stands the monument called the Apotheosis of St. Louis, by the eminent sculptor, Charles A. Neuhaus. On either side are the Palaces of Manufactures and Varied Industries, housing under their ample roofs more products of the world of industry than were ever before assembled under similar circumstances, each building having a length of 1,200 feet and the two covering an area of

act of genius that could be obtained for the instruction or entertainment of the millions of visitors. The designers formed in the first place a "main picture," the local feature of which is the Hall of Festivals, with the colonnade of states in the center. Upon avenues radiating from this like the ribs of a fan are placed eight main exposition palaces, which, with their general similarity of architecture, their sculptural treatment and their landscape setting, form a picture of harmony pleasantly combined with variety. In this group, besides the four palaces already mentioned, are those of Liberal Arts, Mines and Metallurgy, Machinery and Transportation, the last named being the largest of the eight central structures, 1,200 feet in length and covering nearly sixteen acres, including over four miles of railroad track. To the southeast of this central group and toward the city of St. Louis one finds the building erected by the United States govern-

ment buildings are to be seen. The foreign buildings, like those of Great Britain, France, Mexico, Brazil, Sweden, Austria, Canada, Belgium, China, Cuba, Ceylon, etc., with their gardens and attractive landscape settings, are to the west of the buildings in the central group. They form a notable part of the exposition.

But before we leave the westernmost boundary of the site another notable group of buildings is encountered. These are of granite in the Tudor style of architecture, costing many hundreds of thousands of dollars, and after the exposition are to be used by the Washington university. At present these structures are known as the Administration building, Hall of Congresses, Lady Managers' building, Jefferson Guards' building and Physical Culture hall of the exposition. In this part of the grounds, too, are the great aeronautic concourse and the arena for athletic contests.

LANDSCAPE ON A GRAIN OF CORN

Flemish artist has produced what is said to be the smallest painting in the world. It is a picture of a miller mounting the stairs of his mill and carrying a sack of grain on his back. The mill is depicted as standing near a terrace. Close at hand are a horse and cart, with a few groups of peasants idling in the road nearby. All this is painted on the smooth side of a grain of ordinary white corn. It is necessary to examine it under a microscope, and it is drawn with perfect accuracy. It does not cover a half inch square, and it is in many respects one of the most remarkable art products of the day.

Scientific Precision Needed In Modern Naval Gunnery

MODERN wars are won by the men behind the guns. Especially is this true of the naval end of the contest. The more skill, accuracy, training and science developed in the fighting crews of a fleet the more certain is that fleet to win victories. The fact that the Japanese have shown themselves to possess these essentials has given them all the advantage thus far gained over their larger foe. In no sense does this statement detract from the credit due to a commander like Togo. But no admiral, even though he be a Nelson, can win battles with an inefficient crew. Strategy is a powerful aid, but good marksmanship is an absolute necessity.

Gunnery, and naval gunnery particularly, is now as much of a science as is astronomy. It depends upon instruments as nicely adjusted, on mathematical formulas as intricate, on calculations as exact. But the science of naval gunnery contains elements of difficulty that do not enter into any other science. Peril, the need for lightninglike rapidity, unforeseen contingencies and numerous other disturbing factors are encountered that make an added need for exactitude while preventing its being secured. For example, the roll of the ship, together with its pitching fore and aft, the constant change of position of the enemy's vessel at which the fire is directed, the influence of the wind on the projectile, the difficulty of finding the range which in action is constantly changing, the drift of the shell caused by its whirling motion, the trajectory or fall of the projectile which is influenced by the density and barometric condition of the atmosphere, the jump of the gun at the instant of firing, the possible defects in the sights or in the timing of the discharge, the variations in the quality of the powder and the danger of a hang fire or a premature ignition of the charge—all of these variable elements must be taken into consideration. In the sea fight off Santiago it is estimated that only about 10 per cent of the American shells took effect and possibly not more than 1 per cent of the Spanish shells. It is well nigh impossible in an average naval battle for a

higher percentage of efficiency to be reached than in the Yankee gunners achieved at that time.

In making the modern monster twelve inch guns, a number of which are in use in the Japanese navy, it is necessary to have them heavy enough at the breech to withstand the enormous explosive pressure. One of the first essentials in the manufacture of all arms is to insure the operator's safety. Even a suspicion that a gun is unsafe causes apprehension on the part of the gunners and detracts from their efficiency. Because of the new conditions constantly arising it is essential that the men at all times have their wits about

bands of the enemy than they will the peril of unsafe weapons in their own hands. The danger of explosion is great, even with all the precautions taken to avoid it. The heating of the gun by constant firing may cause this, or a ball may become lodged. In the latter case the result is usually to blow off the muzzle, which is outside the ship, and has no more serious consequences than to put the gun out of action. In firing it is necessary to have the breech closed, which is usually done by automatic arrangement, a safety appliance being provided that makes it impossible for the charge to ignite so long as the breech remains open.

degree of this curve, then controlled by gravity alone, would be easily determined. As the resistance of the air also operates, the calculation becomes much more complicated. The accom-

plishments of the science used in the construction and operation of modern ordnance.

The scene on board a battleship in

the sights are on the ship of the foe the charge is set off. The first shot is largely experimental. After observing its effect the gunners can tell better where to aim the next. Allowances must be made for the constantly shifting positions of both ships. The difficulty is also much enhanced unless smokeless powder is used by the smoke constantly enveloping the vessels after the real fighting begins. Adds a very hell of belching guns, bursting shells and groups of the wounded on decks slippery with the blood of the dead and dying, the battle goes on till the great iron monster of the foe reels and runs for shore or sinks into the sea—that is, if the aforementioned monster does not succeed in sinking your own ship first.

WALLACE O. WILCOXSON.

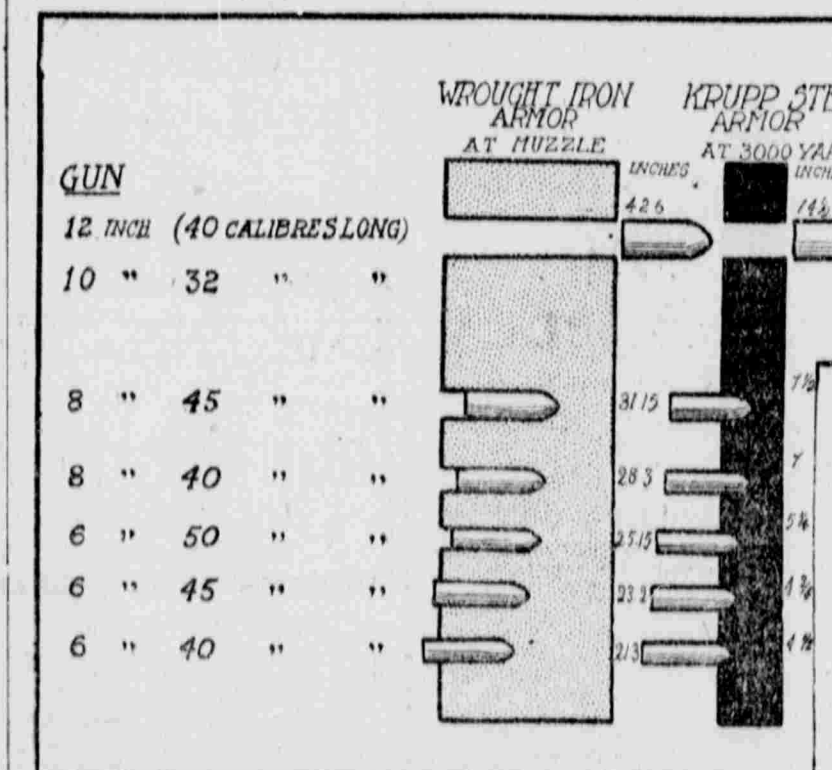
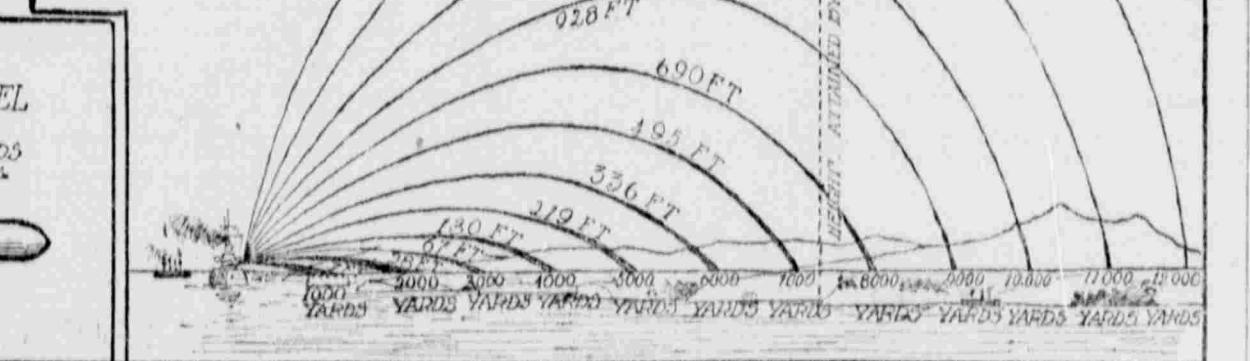


DIAGRAM SHOWING THE PENETRATIVE POWER OF MODERN PROJECTILES.



TRAJECTORIES OF SHELLS AT VARIOUS DISTANCES.

panying diagram gives an idea of the curve described by a twelve inch shell fired at ranges varying from 1,000 to 12,000 yards. The curves in this cut are on an exaggerated scale, being many times as great as those actually described—that is, the culminating or highest point reached by the projectile in each case is many times as high in the diagram as it is in actual firing. The danger space in each instance is shown by the heavy shading at the end of the shell's path. It will be seen that this diminishes with the longer ranges, due to the lesser velocity of the projectile and the greater angle at which it strikes the target. In practice the distances at which battles occur are usually from two to four miles. The greatest range here shown is a little less than seven miles. The shells, of course, can be thrown for a much greater distance. One from a nine inch gun has been known to travel twelve

miles, the trajectory being over 21,000 feet, or more than two miles higher than Pike's peak if the gun were fired from the adjacent plain. A thirteen inch shell would travel a still greater

distance. But at such great ranges it is impossible to secure accuracy of aim, and the damage inflicting effectiveness of the projectile is much diminished. The other illustration shows the penetrative power of shells of various sizes. The twelve inch shell, which will pass through forty-two and one-half inches of wrought iron at the muzzle of the gun, pierces only fourteen and one-half inches of Krupp steel at the distance of 3,000 yards, or nearly two miles. The smaller shells, of course, have much less penetrative power.

All shells are meant to explode where they will do most damage to the enemy. Shrapnel bursts in the air, being exploded by time fuse. The shells shown in the illustrations are of a different variety and are intended to be set off by an automatic arrangement after the projectile has passed its way into the enemy's ship. To so contrive these that they do not explode upon impact

HIS REVENGE.

A daring Dutchman recently had the temerity to call a constable a monkey, a form of untruth which is not permitted in Holland. He was arrested and on being brought before the judge charged with "insulting the police" he was sentenced to forty-five days' imprisonment. Before being removed he turned to address the court. "Then I mustn't call a constable a monkey," he said. "Certainly not. You must not insult the police." The culprit reflected, "May I call a monkey a constable?" he asked, with a flash of genius. The judge shrugged his shoulders and, holding no brief for the animal, he replied, "If it gives you any satisfaction, the prisoner turned on his heel in the dock and bowed to his prosecutor. "Good day, constable," he said.

STRANGE DIET.

A young man of twenty-two—Emile Trucoux by name—who died recently at Montreal during the whole time of his life had taken to nourishment but milk and sugar. While still a child he was medically placed upon a milk and sugar diet, and this he continued unchanged to his death, presumably from choice. His daily rations were three pints of milk and one pound of sugar. Although solid food was thus a thing unknown to him, he is said to have been physically robust and suffered from no illness until the attack of crup which ultimately proved fatal.

ALL AROUND THE WORLD.

Eighteen miles is the longest distance on record at which a man's voice has been heard. This occurred in the Grand canyon, Colorado, where a man shouting the name "Bob!" at one end, the voice was plainly heard at the other end, which is eighteen miles away.

A violinist by a resident in north London consists of the greater part of

a human skull, over which is stretched a piece of sheepskin, acting as the sound board. The finger board is formed of a human thigh bone, while the pegs were once the small bones of the hand of a South African native.

Past days in Russia are numerous. Besides the ordinary Lenten period, which, however, lasts forty-eight days

instead of forty, they have three shorter periods of fasting—one of nineteen days in June, one of fourteen days in August and another of thirty-three days in November and December. There are, in addition, three single days of fasting.

The French minister of public works has taken up the question of sanitation in railway carriages. Circulars have been sent to the various railway com-

panies ordering the immediate removal from railway carriages and stations of all nonwashable carpets and the cessation of the system of dry sweeping and cleaning. Even carriage seatings are to be in washable materials.

Few ladies have made so slight a change in their names on marriage as the Countess of Harrington, whose maiden name was Carrington.

King Edward is not so tall as many

people imagine, and whenever his majesty is photographed in a group he is invariably put to stand on some small eminence, such as a step, in order that he may compare as well as possible with those about him. In his stockings he is just five feet seven inches. His majesty wears boots with high heels, and his total height as he walks is five feet eight and one-half inches.

Sir Henry Irving attributes his won-

derful health very largely to his inviolable custom of eating a heavy supper at midnight and taking forty whisks every afternoon. Beyond a short daily stroll in company with a favorite dog, he takes practically no exercise.

Small singing birds live from eight to eighteen years. Ravens have lived for almost a hundred years in captivity, and parrots longer than that. Fowls live ten to twenty years. The wild

goose lives upward of a hundred years, and swans are said to have reached the age of 300. The long life of birds has been interpreted as compensation for the great mortality of their young.

The Sultan of Anjouan, in the Comoro islands, has just sent a selection of elegantly dressed dolls to a European museum of toys. They have no heads, the representation of the human face being forbidden by the Mussulman religion.