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'What is a
Congreve Rocket'

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ed. The peninsula was a noted haunt of pirates and bandits. Doctor Pablo went to the cabin of the person who was pointed out to him as the most desperate pirate, a fellow who would do his half-a-dozen murders in a day, and said to him, "Mabutin-Tajo"—that was his name—"you are a great villain. I am the lord of Iala-Iala; I wish you to change your mode of life. If you refuse, I'll punish you. I want a guard; give me your word of honor that you'll be an honest man, and I will make you my lieutenant." The man, after a pause, vowed that he would be faithful to the death, and showed the way to the house of another desperado who would be his sergeant. From these, and with these, the doctor went to others of their stamp, raised a little army, and by evening had, in cavalry and infantry, a force of ten men, which was as large as he required. He was captain, Mabutin-Tajo was lieutenant, and the business of the men was thenceforward not to break order, but to keep it. He got the people of the place together, caused them to consent to assemble in a village, marked the line of a street, planned sites for a church and for his own mansion, set the people at work, and masons and master workmen to help them, from Manilla.

The people of Manilla thought the great French physician had gone mad, but his faithful wife heartily entered into his scheme; and, after eight months of constant passing to and fro, he at last informed her that her castle at Iala was erected, and conveyed her to her domain.

Doctor Pablo begged from the governor the post which we should call in London, that of Police Magistrate of the Province of the Lagune. This made him the supreme judge on his own domain, and secured more perfectly his influence over the people. From the Archbishop Hilarion, he begged Father Miguel de San Francisco as a curate. This priest was denied to him, as a person with whom no one could live in peace. Doctor Pablo persisted and obtained his wish. Father Miguel came. He was a fiery, energetic man, a Malay, who got on very well with his new patron, and was appreciated by his flock; not the less because he labored much among them as a teacher and in other ways, and preached only once a year, and then it was always the same sermon—a short one in two parts—half Spanish for the gentlefolks, half Tagaloc for the Indians.

In this way, Monsieur Paul de la Gironière settled at Iala. There he lived many years. He reformed the natives, taught them, and humanized them. Without a cannon-shot, he put an end to piracy. He cleared woods, and covered the soil with plantations of indigo and sugar-cane, rice, and coffee. The end of his history was that he left Iala-Iala when its church contained the graves of his dear wife and of his two infant children, of a favorite brother who had quitted France to dwell with him, of his wife's sister, and of other friends. Doctor Pablo went back, a lonely man, to his old mother, in France, in the year eighteen hundred and thirty-nine, after having passed twenty years in the Philippines.

WHAT IS A CONGREVE ROCKET?

WHOEVER has stood upon a fortification near a cannon when fired, will have noticed the recoil, or backward movement of the piece on its wheels. More feelingly the force of the recoil will manifest itself to the rook-shooter, who, firing skyward many times in succession, often gets punished for his wanton destruction of corvine-life, by a bruised shoulder, or occasionally even a broken collar-bone.

Now, in all ordinary cases, it is the object of the gunmaker—understanding the term gun in its generic sense, including cannon as well as small-arms—to deaden or diminish this force of recoil. As concerns small fire-arms, more especially rifles and pistols, any considerable recoil is most injurious, as it throws the barrel out of the due line of aim; and this is the chief reason why so great a weight of metal is put into such barrels. In the case of pieces of ordinance, it will be found that the force of recoil, when it goes beyond a certain extent, not only disarranges the aim, but renders the piece unmanageable, more especially on board ship.

Let us suppose now, that the cannon on the fortification is charged—is discharged—and recoils. The explosion, however, being instantaneous, the recoil soon comes to an end. If the explosion were susceptible of prolongation, and if the mouth of the cannon could be maintained by some device in its original position, then the best way of attacking an enemy, supposing the expense of a cannon to be no object, would be to turn the breech of the gun toward him, and allowing it to take flight through the air like any other projectile. This notion may cause a smile; but we do not know in what manner the general theory of rockets could be rendered so intelligible, as by commencing where we have commenced—with the recoil of a gun. A rocket, in point of fact, may be described as a gun charged with a slow-burning combustible, so that when discharged, or rather ignited, it recoils, first a little, then a little more, and so more and more, until the force of recoil imparts to the mass a power proportionate to its weight multiplied by its velocity. Most people have seen a sky-rocket; many have examined it, perhaps; still more have traced the fiery course of the beautiful pyrotechnic ornament as it mounted aloft with arrow-like velocity, then watched its graceful bend and final distribution of variegated stars. Lastly, most persons are cognizant, we presume, of the fact, that each rocket is furnished with a stick, serving the purpose of a rudder, or a tail. Now, the sky-rocket is propelled in consequence of its own recoil. Were we to retain the idea with which we commenced our description, we should say *re*pelled, in consequence of this recoil; but inasmuch as recoil becomes in the rocket the primary or chief force, we had better, from this period to the end of the paper, turn our ideas of recoil upside down. As for the stick-tail, or rudder—the reader may denominate it as he pleases—its use is to keep the mouth or aperture of the

rocket, from which the flame escapes, continually downward. It is tied laterally to the rocket. If it admitted of being affixed centrally, then the flight of the rocket would be more direct, instead of having a general tendency to lateral flight. Considering the rocket as an ornamental fire-work, this directness of flight would be rather prejudicial than otherwise, its curvilinear path being exceedingly beautiful. Were it desired, however, to metamorphose the sky-rocket into a warlike projectile, then, in proportion to its directness of flight, would be its advantages.

Step by step, we are now approaching the construction of a Congreve or war rocket, which, as at present made, chiefly differs from a sky-rocket in the two particulars, of having a sheet-iron instead of a paper cone, and of being supplied with a central instead of a lateral stick. The first Congreve rockets did not possess the latter advantage. They had sticks laterally attached, like those of ordinary sky-rockets. Of this kind were the rockets employed by the British troops at the battle of Leipsic; and so desolating were their effects, that some French troops against which they were fired immediately laid down their arms. The war-rocket is so intimately associated with the name of Sir William Congreve, that by over-zealous advocates he is assumed to be their inventor, although he himself disclaims the honor. In his book on the rocket-practice, he states that rockets, considered as projectile weapons, were of great antiquity in India and China, and claims to be only the improver of the weapon. Indeed, we have met with undoubted testimony, that the projectile force of the rocket used as a military weapon was known in Europe before the latter part of the sixteenth century: in the year 1598 appeared the collection of *Traites Militaires*, by Hanzelet, in which book there exists not only a full description of the manner of using rockets as military weapons, but a rude wood-cut, showing the method of firing them.

Some years ago, we remember to have seen in the London Adelaide Gallery certain Chinese war-rockets. They were captured by our troops at the siege of Amoy, and brought to the British metropolis. To all intents and purposes they were sky-rockets, with the sole addition to each of a barbed arrow-head affixed laterally in the line of the stick, and projecting beyond the head of the rocket. Compared with even the smallest Congreve rockets employed in our service, they were insignificant affairs. Their flight would be altogether irregular, their power of penetrating comparatively weak. Nevertheless, one of them would undoubtedly have killed a man at the distance of 200 yards: consequently, these Chinese weapons admit of being regarded as a variety of small fire-arms; while even the smallest Congreve rocket may be compared with artillery. So much, then, concerning the history of the war-rocket up to the time of Congreve. He was the first who employed an iron instead of a paper case. He was also the first who applied the central stick; and succeeded in making rockets of one denomination so equal in weight, that the elements of the flight of one being known, data were afforded for the discharge of others.

The war-rocket is a very terrible instrument of destruction, possessing certain advantages which other projectiles do not. Thus, for example, the discharge of rockets, as a consequence of their very nature, is attended with no recoil against a solid body. That which corresponds with recoil in an ordinary gun, is, as we have seen, the propulsive force of the rocket, and the counterpart of this propulsive force is exerted against the air. Owing to this absence of practical recoil, rockets may be fired from boats just large enough to carry them; whereas shells of equal weight, if employed in naval warfare, can be fired only from very strong ships. Rockets carrying within themselves their own propulsive power, require neither guns nor mortars to project them; consequently, they may be fired from places altogether inaccessible to artillery, and they may be constructed of much larger dimensions than any available shot or shell. Gun-founders are now pretty well agreed, that no piece of ordnance can be cast without flaws if much larger than a 13-inch mortar; and the weight of the latter is five tons, although the charged 13-inch shell scarcely weighs 200 pounds. The French tried the experiment of increasing the size of a mortar preparatory to the siege of Antwerp. The experiment was unsuccessful, their monster-mortar bursting after having been only a few times discharged. "The rocket," to use the words of Congreve, "brings into operation the power of artillery every where, and is nowhere embarrassed by the circumstances limiting the application of artillery." It imparts to infantry and cavalry the force of artillery, in addition to the power of their own respective arms. Thus, a foot-soldier might, on particular occasions, carry several 12-pound rockets, each having the propulsive and penetrating effect of a 12-pound cannon-shot, without the embarrassment of the 12-pounder gun. The rocket, as we shall hereafter discover, may be discharged on many occasions without the aid of any apparatus; but even the corresponding rocket-tube, by means of which its accuracy of flight is promoted, weighs only 20 pounds, whereas the weight of a 12-pounder gun is no less than 18 hundredweights. In addition to this advantage, the flight of a rocket is visible, whereas the flight of ordinary warlike projectiles is invisible; and superadded to the power of penetration, the rocket has that of scattering the devastation of fire. These properties of the war-rocket being considered, the reader will be at no loss to understand some of the advantages possessed by the missile.

Nevertheless, the employment of the war-rocket is not attended with those universal advantages over shot and shell claimed for it by Congreve. Amidst its good qualities there lurks the very bad one of irregularity of flight, its accuracy of trajectory curve not being comparable with that of a cannon-ball or shell. Rockets can be advantageously fired neither against a wind

nor across the direction of a wind, and for reasons which a little consideration will render obvious. The long wooden stick affords a powerful lever for the wind to act upon, the iron rocket itself being at the same time unequally affected; hence ultimate deflection takes place. The striking of a casual object in the course of a rocket's flight is another ordinary cause of deflection; and to such an extent is deflection occasionally produced from this cause, that rockets have sometimes come back, like boomerangs, to the spot whence they were fired. Something of this kind once occurred at Woolwich during a military exhibition got up for the gratification of Marshal Soult. The veteran, among other displays, was shown what our war-rockets could accomplish; when one of these erratic missiles striking against a stone or something of that sort, immediately departed from its normal course, bounded high aloft, and finally rushing down, plunged deep into a bank near where the Marshal was posted. It was on account of this erratic propensity to which rockets are somewhat given, that they were never great favorites with the Duke of Wellington. Some of the newly-invented projectiles having been forwarded to the Peninsula, the Duke took an early opportunity of trying their range and effects. The British outposts were on one side of a marsh; the enemy's outposts on the other. The distance was convenient: the rockets were pointed, lighted, and discharged. The result was any thing but satisfactory. Either because the wind was unfavorable, or because the rockets had not been long enough in the field to know friend from foe, or for some other reason, they with common consent turned tail to the enemy, and came back to their friends! The Duke entertained a prejudice against them from that day forth. Nevertheless, they are acknowledged to have saved a brigade of Guards during the passage of the Adour; and subsequently, at Waterloo, they made sad havoc among the enemy.

The original ideas of Sir William Congreve, relative to the best manner of arming troops with the war-rocket have never been carried out. He advocated the distribution of the missile to every branch of the service—infantry, cavalry, and artillery. He objected to the formation of a special rocket service: however, in this matter, his opinions have been overruled. Congreve suggested three methods of firing his rockets: 1. From a tube, and singly; 2. In a volley from many tubes, mounted on one carriage; 3. In a volley from the ground. Two only of these methods are now retained—namely, the first and the third. The rocket tube is a pipe or cylinder of metal, corresponding in size with the diameter of the rocket intended to pass through it, and its business, to give a correct line of flight. In the earlier days of Congreve-rocket practice, there were no tubes, deeply grooved surfaces being used instead. The rocket tube is so contrived that it can be placed at any angle of elevation, and be thus pointed in the manner of a gun. The proper line of aim having been secured, the rocket is thrust into the tube, and ignited, when, after deliberating for an instant, it rushes through and pursues its destructive course. Having thus made evident the construction and use of a rocket tube, the reader will readily understand the intention of a compound-tube arrangement. Let him imagine twenty or thirty of such tubes mounted on one carriage, each tube discharging its own rocket, and a correct notion of what is understood by the tube-volley will be acquired. This apparatus is no longer retained in the service, the ground-volley of rockets being employed instead. In the ground-volley, the rockets are merely placed on the ground (which must be moderately smooth), with their heads toward the enemy, when they are ignited, and speed away. For the first hundred yards, they ordinarily pursue a course of considerable regularity, seldom rising above the height of a man's head; ultimately, however, their flight becomes exceedingly irregular, darting about in all directions. This, in certain cases, is not disadvantageous, but the reverse. So impossible is it to predict where one of these rockets run wild will go, that it is in vain for any body to think of getting out of its way.

A great many endeavors have been made to avoid the necessity of employing a rocket-stick. Congreve never could succeed in this attempt, but Mr. Hale has been more fortunate. We do not exactly know the principle on which his rockets are made, but we believe he causes them to assume a rotatory or rifled motion, and thus provides for their regularity of flight. Mr. Hale has, moreover, introduced other improvements in the manufacture of rockets. He does not fill them by ramming in the composition, but by the more equable force of hydrostatic pressure, by which means a larger amount of composition is introduced than can be effected by the ordinary method. Nor must we forget to mention the very ingenious device of this gentleman for restraining the rocket during the first moments of its propulsive endeavors. Although the power of a rocket, when in full flight, is tremendous, yet its initial effort is very trifling; so much so, that one of considerable dimensions may be held back by a very small restraining force. Now it happens that, in the ordinary course of firing, a Congreve rocket is apt to droop as it first leaves the tube, thus losing much of the accuracy of flight it would otherwise have possessed. This drooping is in consequence of the paucity of the force it has as yet acquired; for rockets, in point of fact, like young people, go astray sometimes from the circumstance of beginning their career too soon: so it occurred to Mr. Hale, that he would hold back his projectiles—not by the tail, for they are devoid of that ornament—but hold them back by a sort of spring, from which they can not free themselves until they have acquired a certain definite initial pressure.

We will now conclude these remarks on Congreve rockets, by stating the chief occasions on which they have been employed. The first was in October, 1806, when rockets of very large calibre were brought into requisition for the bombardment of Boulogne. In less than half an

hour after the first commencement of attack, the town was observed to be on fire in many places, and the damage effected was doubtless very great, although its exact extent was never known, the French taking such effectual means to guard the secret, that the British embassador, Lord Lauderdale, while passing through Boulogne shortly after the attack, was vigilantly watched, lest he might observe the extent of the ravage. In 1807, Copenhagen was bombarded with very heavy rockets; and again, with great effect, they were subsequently used against Acre. These are the chief occasions in which Congreve rockets have been used at sea. In the land-service, their employment dates from the battle of Leipsic, where they were employed with terrible effect. Their history during the Peninsular war has already been given—also at Waterloo. The Congreve rocket is no longer a secret. Various Continental nations now make and employ them very effectually. The Austrian rockets are said to be particularly good. One of the most curious applications of the Congreve rocket was in the slaughter of spermaceti whales. We have now lying before us a six-pounder whaling rocket, precisely similar to the military prototype in every respect, save that of being furnished with a harpoon-head. The idea of using the Congreve rocket for this purpose was ingenious enough. The inventor intended that the missile, when discharged, should penetrate into the very centre of the whale; then bursting, fill the huge animal with such an amount of gas, that swim he must, whether he chose to do so or not—all very pretty in theory, no doubt, but entirely false in practice. Congreve whaling-rockets did not come into general use; nevertheless, they must have been made in very large numbers. We remember, on one occasion, to have seen a stock of many thousands lying idle in the store-rooms of a large whaling establishment. And now, in conclusion, let us state, that the largest Congreve rockets ever made weigh about 300 pounds, are eight or ten feet high, and have sticks in proportion. Very pretty visitors these to come hissing into the midst of a town!

THE LAST MOMENTS OF BEETHOVEN.

HE had but one happy moment in his life, and that moment killed him.

He lived in poverty, driven into solitude by the contempt of the world, and by the natural bent of a disposition rendered harsh, almost savage, by the injustice of his contemporaries. But he wrote the sublimest music that ever man or angel dreamed. He spoke to mankind in his divine language, and they disdained to listen to him. He spoke to them as Nature speaks in the celestial harmony of the winds, the waves, the singing of the birds amidst the woods. Beethoven was a prophet, and his utterance was from God.

And yet was his talent so disregarded, that he was destined more than once to suffer the bitterest agony of the poet, the artist, the musician. He doubted his own genius.

Haydn himself could find for him no better praise than in saying, "He is a clever pianist."

Thus was it said of Géricault, "He blends his colors well;" and thus of Goëthe, "He has a tolerable style, and he commits no faults in orthography."

Beethoven had but one friend, and that friend was Hummel. But poverty and injustice had irritated him, and he was sometimes unjust himself. He quarreled with Hummel, and for a long time they ceased to meet. To crown his misfortunes, he became completely deaf.

Then Beethoven retired to Baden, where he lived, isolated and sad, in a small house that scarcely sufficed for his necessities. There his only pleasure was in wandering amidst the green alleys of a beautiful forest in the neighborhood of the town. Alone with the birds and the wild flowers, he would then suffer himself to give scope to his genius, to compose his marvelous symphonies, to approach the gates of heaven with melodious accents, and to speak aloud to angels that language which was too beautiful for human ears, and which human ears had failed to comprehend.

But in the midst of his solitary dreaming, a letter arrived which brought him back, despite himself, to the affairs of the world, where new griefs awaited him.

A nephew whom he had brought up, and to whom he was attached by the good offices which he had himself performed for the youth, wrote to implore his uncle's presence at Vienna. He had become implicated in some disastrous business, from which his elder relative alone could release him.

Beethoven set off upon his journey, and, compelled by the necessity of economy, accomplished part of the distance on foot. One evening he stopped before the gate of a small, mean-looking house, and solicited shelter. He had already several leagues to traverse before reaching Vienna, and his strength would not enable him to continue any longer on the road.

They received him with hospitality; he partook of their supper, and then was installed in the master's chair by the fireside.

When the table was cleared, the father of the family arose and opened an old clavecin. The three sons took each a violin, and the mother and daughter occupied themselves in some domestic work.

The father gave the key-note, and all four began playing with that unity and precision, that innate genius, which is peculiar only to the people of Germany. It seemed that they were deeply interested in what they played, for their whole souls were in the instruments. The two women desisted from their occupation to listen, and their gentle countenances expressed the emotions of their hearts.

To observe all this was the only share that Beethoven could take in what was passing, for he did not hear a single note. He could only judge of their performance from the movements of the executants, and the fire that animated their features.

When they had finished, they shook each oth-