THE PROTECTOR

AND CHRISTIAN WITNESS.

"RIGHTEOUSNESS EXALTETH A NATION: BUT SIN IS A REPROACH TO ANY PEOPLE."—Prov. xiv 34.

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A GLIMPSE OF SARAWAK.

On the 11th of August, 1852, I embarked at Singapore in a small trading-schooner bound for Sarawak; and aided by a favourable breeze and a rapid tide, we were soon carried past the verdant shores of the Straits of Malacca, into the China Sea, across which we stretched direct for Borneo. After four days' sail, the outlines of the mountains of that island appeared in the distant horizon, blue and bright through the clear atmosphere, gradually rising up from the water, and darkening in colour, and shewing more clearly their spurs and valleys as we closed in with the land. Next appeared the low level coast-line, black with the forests of centuries, whose dark and heavy verdure stretched in unbroken mass over the whole face of the country, far away over and beyond the tops of the highest and most distant mountains. As we passed along, the coast-line was seen to be occasionally broken by the mouths of large rivers, which discharge their waters through gaps in the ceaseless and apparently impenetrable jungle, and which, by their broad and stately streams, afford access to the interior of the country. We were becalmed for some time off Cape Datu—a high bold promontory that projects far into the sea—till, a heavy squall coming down from the top of the bluff, necessitated a rapid reduction of sail, but bore us at the same time gallantly over the waves. As the night closed in, the clouds gathered in masses; but the almost incessant play of sheet-lightning around the horizon afforded a sufficiency of light by which to continue our course; and about midnight we cast anchor off the Santubong entrance of the Sarawak river.

Next morning the weather was stormy and hazy; but unpropitious as the day was, it gave us a favourable idea of the picturesque character of the country. On one side of the river, close to its mouth, and close also to the beach, Santubong mountain shot up almost perpendicularly to the height of nearly 3000 feet, stretching away seaward in a long, irregular, broken, and picturesque range, and terminating in a bold bluff cape, round whose base the waters of the China Sea heaved and broke. On the other side rose a lower and less striking hill, between which and Santubong the river opened, like the open gate of an avenue, inviting us to explore the country. There we entered with the flood-tide, and in due time arrived at Kutching, the capital of the world-famed Sarawak.

I do not intend to repeat the story—so well known through the works of Captains Keppell and Mundy—of the manner in which Sir James Brooke became rajah of Sarawak; I may, however, be pardoned giving the following illustration of the cool manner in which he looks danger in the face, and prepares against it.

When Mr. Brooke first arrived at Kutching in the *Royalist*, he landed and paid his respects to Muda Hassim, the Malay rajah of the place; and in return invited that prince, with several of his nobles and their followers, to visit him on board his yacht. I have shared in the surprise which I have often heard expressed, that Mr. Brooke should have invited on board his yacht a Malay prince and his followers, of whom he knew comparatively nothing, except that they belonged to a race whose name is synonymous in the east with ferocity, treachery, and blood-thirstiness, and who, wherever they are known, are noted for their addiction to piracy. It is true, they are by no means so bad as they are represented to be; and it is equally true that they possess many fine qualities, which are discovered upon closer acquaintance; but still the general character they bear, and by which alone Mr. Brooke could have known them, is that of treacherous pirates. Mr Brooke, however, resolved to return Muda Hassim's hospitality, without exhibiting either fear or suspicion, while at the same time he took effectual measures to baffle any attempt at treachery should such be made. On deck, the crew were drawn up under arms, acting ostensibly as a guard of honor to receive the prince, but prepared for hostilities in case of necessity; while at the same time, the ship's guns were loaded with grape, and trained so as to sweep the deck at the first discharge. In the cabin, where Mr. Brooke was to receive his visitors, he was seated on a sofa with a broad table before him, so as to prevent any sudden stab with a kriss, and under the pillow, which lay carelessly beside him, a pair of loaded pistols were concealed. Above the sofa, a large mirror was placed, and behind the mirror were stationed four men, each with four loaded muskets, who on a given signal were to throw down the mirror, and shew themselves armed. Thus fortified, Mr. Brooke sat at his ease, and received his distinguished visitors with gentlemanly courtesy. No attempt at violence was made; and Muda Hassim remained till the day of his death ignorant of the precautions taken against his possible treachery.

On another occasion, after the present Sarawak government was established, a chief of the Sarebas Dyaks, by name Lingire, made an attempt to take Mr. Brooke's head. He came to Sarawak with several war-boats, ostensibly to pay a visit to the Malay *datus* or magistrates of that place, and moored his boats in the river opposite their campongs, a few hundred yards above Rajah Brooke's house. At length, one night when the tide suited his purpose, he dropped silently down the river to the rajah's wharf, fastened his boats there, and landed with eighty armed men. He then walked up to the house, entered the hall where the rajah was seated at dinner entertaining all the European inhabitants of the settlement, and his men, placing themselves in a semicircle around the table, squatted down, intending to spring upon their victims in the confusion of clearing away the dinner. As soon as Mr. Brooke saw Lingire enter with so many men, he suspected his object, and calling a Malay servant who fortunately understood English, he ordered him to cross the river and tell the *datus* to bring over their men as quickly as possible. This being spoken in English, was not understood by the Dyaks, who, thinking that the rajah had merely given some order about the dinner, saw the servant leave the room without suspicion, and sat still, quietly and intently surveying the scene before them, and waiting the signal of attack from their chief. In the meantime, the Europeans continued their dinner with the best appetite they could, and knowing that their safety depended on their prolonging the meal as much as possible, they were in no hurry to conclude it. From the painful state of suspense in which they were held, they were at length delivered by the arrival of the Datu Tumanggong—a brave old pirate who, in his day, has carried on his depredations within sight of Singapore—who entered the room at the head of thirty Malays. He at once placed himself between the Europeans and Dyaks; and turning upon Lingire, he applied to him many epithets the reverse of complimentary, told him that he knew what he had come for, and ordered him instantly to go down to his boats. The Dyak paused; the odds were eighty to thirty, and he seemed inclined to try the chances of a combat; but while he hesitated, the Datu Bandar entered with fifty men, and he then slunk off to his boats like a beaten dog. When he arrived at Sarebas, he gave it out publicly that his object was to have taken the rajah's head, and he further expressed his determination still to have it; nay, he even went so far as to make a basket for the special purpose of containing it after it should be captured. He now appears, however, to have thought better of the matter; for when I last saw him, he was seated at the rajah's table, talking and laughing and drinking arrack.

The Sarawak territory, as seen from the sea, presents a long low dark coast-line, covered with trees to the water's edge, and occasionally intersected by the mouths of rivers, or broken by bold rocky promontories that project far into the sea. Behind the coast-line, the ground rises in many places into hills and mountains, some of them round and swelling, and covered, like all the rest of the country, with dark jungle; others abrupt and craggy in the extreme, with trees and bushes shooting from every crevice, and creepers and parasites hanging from every cliff and from every tree.

On entering one of the rivers which cleaves its way through the apparently impenetrable jungle, the traveller finds himself in a wide open channel, both sides of which are crowded with the same dark and heavy foliage that covered the coast, and which, notcontent with the possession of the land, seems to aspire to that of the water too, by sending forests of mangroves far into the river. In other parts, the banks are lined by thousands of nipa palms, whose long bending leaves, fringed with their dark and sharp-pointed leaflets, wave gracefully in the breeze, forming the foreground of the mighty jungle that towers up behind. Higher up the river, where the banks are no longer swampy, the mangroves and nipas disappear, but the primeval forest still continues in undiminished and unchanging magnificence; and as the silent stream bears us swiftly onwards over its still and placid waters, glowing with the tints of a tropical evening sky, we pass point after point, and traverse reach after reach, each bank and every change of scene presenting the same wild and lonely grandeur and luxuriance. If a pigeon flies overhead, a monkey leaps from a bough, or the loud and discordant note of some feathered denizen of the forest rings through the air, it is the only sign of life the vast jungle exhibits, except the shrill chirping of the tree grasshoppers which have commenced their evening-song, or the irritating attacks which compel attention to the existence of sand-flies and mosquitoes.

As we ascend the river above the influence of the tides, the channel, though it still continues deep, becomes very narrow, and often appears almost over-arched by the vegetation which clothes its banks. Not only do enormous trees shoot up their giant forms to the height of hundreds of feet, but the margin of the river between the trees and the stream itself is lined with a dense mass of vegetation, as thick and impenetrable, and ten times as high, as a quickset-hedge. One of the most remarkable of the plants that form this fringe to the margin of the stream, is called by the Dyaks *mudiang*, and exactly resembles the plant of the pine-apple, only that it grows upon a stem some twenty feet high. Its fruit, also, has much the appearance of the pine-apple, but is hard and woody within, and utterly unfit for food. These plants grow in great numbers in the mud that forms the margin of the stream, and are the resort of troops of monkeys, which leap, grin, and chatter among them during the day, and at night hang asleep upon them within oars-length of the passing boat.

Higher up the river still, it again changes its appearance; instead of being deep and muddy, it becomes shallow and clear, assuming to a considerable extent the character of a mountain stream. The bottom is sandy or stony, and the fish are seen playing in the pools; the banks are dry and free from mud, allowing the large trees of the jungle to spring up from the margin of the stream, and to interlace their gigantic branches high overhead. Then it is that the forest is seen in all its beauty and grandeur. Tall trunks, straight as an arrow, support the unbroken shade of verdure which clings to their boughs, while long and fantastic creepers embrace the vast columns with their tangled net-work, and hang like festoons from one to another. Occasionally, accident may have cleared a considerable space along the banks, leaving one vast tree standing in comparative solitude, and then is seen the monarch of the forest in all his glory. A vast, massive trunk rises straight as a ship's mast, and without a single branch to the height of 200 feet or more; and from the top of this gigantic column, diverge the spreading branches, covered with their heavy masses of dark-green foliage, the whole forming as fine an object as the eye can rest on.

Sometimes these large trees are found in inconvenient proximity to the traveller: they fall across the stream, and bar his progress. If the trunk is immersed so deeply as that there are three or four inches of water on any part of it, the canoe is unloaded, and the crew, jumping into the water, drag her over the impediment; while if it happens to be resting at a height of five or six inches above the surface of the stream, she is again unloaded, and pushed underneath it.

As the trees seldom fall perfectly flat across the surface of the water, one or other of these methods of passing them is generally practicable; but sometimes neither of them can be followed, in which case, there is no other resource than the laborious and tedious process of cutting the trunk through. As there are also shallows and rapids, as well as logs of wood in the rivers, it will easily be imagined that ascending these smaller streams is a toilsome method of journeying; and so numerous are impediments of one kind or another, that I have sometimes seen the crew wading or swimming continuously for several hours.

I have thus endeavoured to give an idea of the country as seen in going up one of the large rivers. I shall now ask the reader to take a walk with me into the jungle. Jungle is of two kinds—old and young. Old jungle is simply the forest, young jungle is the vegetation which springs up wherever old jungle has been cut down. It consists of a dense mass of grass, reeds, and bushes, impervious to man; and when necessity compels him to take his course through it, he must cut his way with his *parang* or chopping-knife, hewing out a path as he goes along. Walking in old jungle, however, is very different. There, there is comparatively little underwood; the ground is moist and soft with decaying leaves; the air is cool and pleasant; and the enormous trees whose foilage completely keeps off the sun, form a 'leafy labyrinth' of the most imposing and extensive dimensions. Every tenth tree is a giant, whose vast stem, straight as a ship's mast, shoots up aloft till its almost undiminished diameter is hid by the foilage of those around it, and from the visible height of the lower trees which conceal its top, we are left to imagine the size of the higher. Some of them are covered with the strangest-looking creepers and parasites which clothe the stem and festoon the boughs; and occasionally we come to a tree in full flower, which, if it be partially isolated, so as to admit of its being seen from below, affords one of the most beautiful spectacles which the vegetable creation can present. Altogether, though the general appearance of the forest is, except as regards the size of the trees which compose it, very much like that of a wood at home, still the most cursory examination will not fail to shew something very unlike any of the vegetable productions of the temperate zone. Perhaps, however, one of the most striking features of the jungle is the almost entire absence of animal life which it displays—an absence perfectly surprising to the European visitor, who, from the jungle's being unfrequented and almost untrodden by man, is prepared to find it filled with tenants of one kind or other. But no; he walks along amidst this luxuriance of vegetation, and scarcely sees an animal. Almost the only signs of life he discovers are the harsh cry of the hornbill, the plaintive wail of the *wawa* or long-armed ape, and loud but melancholy groaning of the *rassong* or long-nosed monkey; or perhaps the sight of a lizard ascending the rough trunk of some vast tree, or a snake rustling among the fallen leaves or twining among the branches. It is true, that where there are many fruit-trees, the scene is different; there, troops of monkeys abound, and leap and sport among the boughs, now shaking the forest in very wantoness, again sitting gravely on some lower bough, grinning secure defiance on their two-legged bretheren below, treating with majestic contempt the efforts of the Dyaks to frighten them, and gazing with the bliss of ignorance on the terrors of the gun. They are of many hues and of all sizes, from the ourang outang, whose body is as large as that of a tall man, to the smaller species of a span long. There are many birds, too, of different kinds, generally with harsh voices and brilliant plumage, which conceal themselves among the thick leaves, or flit away on too near an approach. Such assemblages of animals, however, are the exception; the rule in the forest is, as I have already stated, great luxuriance of vegetation, and great scarcity of animal life; and in this respect, Borneo at present, I should imagine, somewhat resembles the account given by geologists of England during the formation of the coal. If it be so, it is strange to find the state of our own island many thousand ages ago paralleled by the present state of another island many thousand miles distant.

There is yet another view of the country which I shall endeavour to present—namely, that witnessed from the summit of a lofty mountain. From such a position, as far as the spectator's eye can reach, he looks down upon a generally flat but undulating country, with hills of various forms and sizes scattered around, some of them round and swelling, some with sharp peaks and ridges, and some abrupt and craggy in the extreme, but all of them covered with the same dark and heavy verdure which overspreads the face of the country, except where some limestone cliff gleams through the mass of vegetation which elsewhere shrouds it. In the low ground, he sees the winding rivers pursuing their tortuous course through the unbroken forest, now appearing lustrous and silvery in the light, now red and muddy as they roll along almost at his feet, now buried in the tall trees which clothe their banks, and again reappearing at a distance brighter and more lustrous than ever. The vast expanse of forest spread out before him, induces ideas somewhat akin to those awakened by gazing on the ocean from a sea-side cliff. There is the same extent of prospect, the same monotony of scene, and the same feeling of solitude in the one case as in the other; and this similarity of landscape induces a similarity of ideas, cutting off the soul, as it were, from immediate contact with his fellows, and opening it to the greatness and the majesty of that Power who created alike the ocean and the forest.

CURIOSITIES OF ELECTRICITY.

The peculiarities of that terrible but mysterious agent, lightning, are made the subject of an interesting paper in a recent number of the *British Quarterly Review*. Two clouds are not necessary for the production of lightning which is frequently discharged from a solitary clump of vapour, when a connection can be established with the earth. A French academician, named Marcolle, describes a case where a mere cloudlet about a foot and a half in diameter killed a poor woman by dropping a thunder-bolt upon her head. It has been shown by Farady that the electric fluid contained in a single flash might perhaps be supplied by the decomposition of one grain of water alone. M. Arago has divided the lightning into three sorts. The first includes those where the discharge appears like long luminous lines, bent into angles and zig-zags, and varying in complexion from white to blue, purple or red. This kind is known as forked lightning, because it occasionally divides into two branches. Charpentier relates a case where a flash severed into three forks, each of which struck on points several hundred feet apart. Still more numerous furcations have been reported, for it is said that during a tempest at Landerneau and St. Pol de Leon, twenty-four churches were struck, though only three distinct claps were heard. This was eight churches apiece for the three explosions.

The second class of lightning differs from the first in the range of surface over which the flash is diffused, and is designated as sheet lightning. Sometimes it simply gilds the edges of the cloud whence it leaps; but at others it floods with a lurid radiance, or else suffuses its surface with blushes of a rosy or violet hue.

The third class of lightnings are remarkable for their eccentricities, and have been made the subject of considerable attention among meteorolligists, many of whom have denied their right to be treated as legitimate lightnings, they differ so widely from the ordinary sort of flashes. They exhibit themselves as balls or globular lumps of fire—not momentary apparitions, but meteors which take their own time and travel at a remarkable rate. It is this incelerity which gives them their doubtful character, as an electrical bolt is supposed to be one of the leading emblems of velocity. Among other anecdotes related of this kind of lightning is the following incident which occurred to a tailor in the Rue St. Jaques, Val de Grace, about the year 1743. M. Babinet was commissioned by the Academy of Sciences to investigate the facts, and reported substantially as follows:—

"After a loud thunder-clap, the tailor being finishing his meal, saw the chimney-board fall down as if beset by a slight gust of wind, and a globe of fire, the size of a child's head, come out quietly into the room, at a small height above the floor; the tailor said it looked like a good-sized kitten, rolled up into a ball, and moving without showing its paws. It was bright and shining, but he felt no sensation of heat. The globe came near his feet, like a young cat that wants to rub itself against its master's legs; but by moving them aside gently, he avoided the contact. It appears to have played for several seconds about his feet, he bending his body over it and examining it attentively. After trying some excursions in different directions, it rose vertically to the height of his head, which he threw back to avoid touching his face. The globe elongating a little, then steered towards a hole in the chimney above the mantle-piece, which hole received a stove-pipe in winter, but was now pasted over with paper. 'The thunder,' he said, 'could not see the hole;' but, nevertheless the ball went straight to the aperture, removing the paper without hurting it, and made its way into the chimney. Shortly afterwards, and when he supposed it had time to reach the top, it made a dreadful explosion, which destroyed the upper part of the chimney and threw the fragments on the roofs of smaller buildings, which they broke through. The tailor's lodging was on the third story; the lower ones were not visited at all by the thunder-bolt."

Lightning, when it meets with an obstruction in its course, frequently shatters the non-conducting object, dispersing and bursting substances asunder in every direction, as if they had been charged with gunpowder. The stone pinnacle of a church in Cornwall was struck by lightning, and one fragment weighing three hundred pounds was hurled sixty yards to the southward, another four hundred yards to the north, and a third to the south-west. In 1838 the top-gallant mast of Her Majesty's ship Rodney was literally cut into chips by a flash of lightning, the sea being strewn with the fragments as if the carpenters had been sweeping their shavings overboard. Sometimes, in striking a tree or mast, the electric fluid will slice it into long shreds or filaments, so that it will appear like a huge broom or a bundle of laths. Lightning bolts will occasionally dash through resisting objects by tearing great openings, as in a Cornish church, where apertures were made in the solid wall of the belfry fourteen inches deep, and as if cut out by art. In other instances small holes are drilled which are surprising for their perfect circularity of form. Window panes have been frequently pierced in this fashion, without affecting the rest of the glass. In forming these apertures, a burr or projection is left upon the edges.

Juvenile electricians are in the habit of making holes in cards by passing discharges through them, when a burr or projection will be observed on both sides of the orifice. Sometimes a single discharge will produce two holes in a card, each puncture marked by a single burr, one on the upper and the other on the under side of the card. In some instances the results are such as to suggest that a flash may be split into several fiery filaments before it strikes an object. In 1777 a weathercock of tinned copper was hurled by a thunder-bolt from the top of a church in Cremona, and, upon inspection, was found to be pierced with eighteen holes; in nine of them the burr was conspicuous on one side, and in nine it was equally prominent on the other, while the slope of the burr was identical in all.

Among the curiosities of lightning are what is termed "fulgurites," or tubes, which the lightning constructs when it falls upon a silicious spot, by fusing the sand. They may be called casts of thunderbolts. In some hillocks of sand in Cumberland, England, these hollow tubes have been found from one-fiftieth to two inches in diameter, tapering perhaps to a mere point. The entire extent of the tubes may be thirty feet, but they usually separate into numerous branches, and have the appearance of the skeleton of an inverted tree. They are lined with glass, as smooth and perfect as if it had been made in a glasshouse.

THE INDIAN DRAIN OF GOLD.

India has been charged with draining Europe of its gold and silver for the fourteen centuries between the time of Pliny and that of Columbus. It plundered Europe when Europe had no America to replenish its coffers. It plundered it in the same way when it had, and now it is plundering it worse than ever, although the gold of California and Australia have been added to the gold and silver of Potosi. For the benefit of the thoughtless we shall give a short explanation, which we hope may tend to disabuse them of a very foolish prepossession, for such, beyond all doubt, is the alleged drain of the precious metals:—Gold and silver no more constitute the wealth of a nation than do iron, copper, or tin, but they do, like these, form a part of its wealth. Like these, and like, indeed, every appreciated commodity, they have their specific uses. They are used for plate and for ornaments, but their chief use is as a medium of commercial exchange, a purpose for which their high value, durability, and divisibility peculiarly suit them. For this last purpose, their use is of a similar nature to that of the writing and figures with which we keep our accounts. We could not without great inconvenience do without them, but we could certainly dispense with them with far less inconvenience than we could with iron or copper, or perhaps even with tin. If nature had not furnished them to us, we should certainly be put to awkward shifts, but that would be all. In order to understand what is to follow, we premise that the different metals which may be used as money depend on the social state of the community concerned. Our ancestors in the time of Julius Cæsar used iron rings. The Romans began with copper, and then as they advanced used silver, and finally both gold and silver. Our standard, as the wealthiest people in the world, is gold, while silver and copper are with us, mere counters. Such is now also the case with the Anglo-Saxons of America. The French, who have a double standard of gold and silver, and are now struggling against its inconvenience, will soon be driven to follow our example, for their silver is rapidly draining off to India. The universal standard of the poorer people of Asia, from the Black to the Yellow Sea, is silver. The gold and silver which are beyond our own wants at home we send abroad, and during the last year we have sent to India and China probably not less than fourteen millions worth, consisting almost wholly of silver; and this is a sum certainly equal in value to the whole produce of the gold of Australia within the same time. This is the drain which is supposed to rob us of our wealth; but it is clear that it is no more a drain than our export of iron, copper, tin, or any other commodity of which we have a surplus to dispose of. Silver goes to India and China, because it is, at present, by some 10 per cent more valuable in those countries, than in England, and it flows from America to England because it is more valuable in England than in America. There is no robbery or loss of wealth to any party concerned, but, on the contrary, a fair and profitable exchange. To keep at home, if that were possible, all the gold and silver we import would be to maintain not only an useless but a pernicious hoard. It would be like cramming our warehouses with textile fabrics and metals which we did not want, and refusing to exchange them for what we did want. It would be Adam Smith's simile of keeping more pots and pans than we had food to cook. Indeed, it would be more absurd. Suppose, for example, we had, were it possible, kept all the gold and silver we have imported since the Californian and Australian discoveries, the amount would by this time have probably been some fourfold over and above our wants. Independent of the cost of maintaining the monster hoard, the result would be a fourfold price of every commodity that gold and silver represented. The loaf of bread, instead of ninepence, would cost 3s., and our exorbitant prices would cut us off from all foreign intercourse. Our present exports of £120,000,000 would cease, and so of course would our imports, since no foreigner would take our goods. No more gold and silver would assuredly come into a country where they were at a depreciation of seventy-five per cent. The only advantage we should derive would consist in cheaper trinkets and cheaper plate. A silver tea-pot which now costs £10 might be had for perhaps 50s, and a marriage ring for which we pay 10s would be had for half-a-crown—a precious compensation for our folly. But to return to India and China. Our principal export of silver at present is to these countries, and why it is so is readily explained. As we have already stated, it is, with the exception of small change in copper, zinc, or shells, the sole currency of every country of Asia. They have no paper money to substitute for it, and few bills of exchange, and the consequence is that their consumption of silver is large proportioned to their small wealth. Hindustan and all the countries in its neighbourhood, which have been represented for eighteen centuries as the special sink of the precious metals, have no silver mines of their own, and must of necessity receive silver from abroad, and they do receive it (at present, chiefly through us), exactly in the same manner in which they receive copper and tin, which they largely consume, but of which they are as destitute as of the two precious metals. India, then, is no more a sink of silver than it is of copper and tin—indeed it is hardly a greater sink of the precious metals than England itself, which produces very little and imports a vast deal. But besides, India is at present exporting a great deal of its own produce and importing much less of ours. We export to it about £11,000,000 worth; and in indigo, cotton, corn, sugar, and some thirty minor products, we import at least £18,000,000 worth. The balance must be paid in silver. Again, the construction of railways is proceeding in India with English capital to the amount of many millions, and this has to be sent in the shape of bullion. Silver is at this moment more than 10 per cent dearer in India than in England, and as long as this is the case exportation from the latter to the former is sure to continue. The case of China is somewhat different although similar. It has mines both of gold and silver, and therefore, proportioned to wealth and numbers, requires a smaller foreign supply. At present, however, it is exporting, and chiefly in the great staples of tea and silk, far more than it imports of English or Indian products. But China is far more easily saturated with the precious metals than India, and has been as often an exporter of them as an importer. For a score of years, and down to 1851, it exported to the yearly amount of a couple of millions, and we ourselves, in the form of a contribution, carried off a round six millions, nearly the whole in native silver. Such a reflux is pretty sure to take place in due time, and then, there will assuredly follow an increased consumption of Indian products and British manufactures.—*Examiner*.

The Bombardier.—This is a name given to a species of beetle, known by its head and thorax being brick red, and its body of a bluish hue. When a person attempts to catch it, he is surprised by a discharge resembling a popgun, accompanied with a sort of smoke, of which it is furnished with a sufficient quantity to fire off twenty shots in succession. If this chances to get into their eyes, it will make them smart as if they had bathed them with brandy. Its chief enemy is a beetle, larger than itself, which hunts it without mercy. As it finds it impossible to escape by speed of foot, it stops short and awaits its pursuer; but just as he is about to seize it, he is saluted with a discharge, and while he is for a moment stupefied with surprise, the bombardier endeavours to gain a hiding-place.—*Natural History*.

A NEW MOTIVE POWER.

Material force is the life of the world. It is that which modifies matter into endlessly diversified forms, motions and conditions, and evolves the wonderful results that surround us. Without it there could be no varieties nor properties of matter; neither colors nor motions, not a voice nor a sound. As in nature, so it is in the arts. Force is everything to them. All our machines, simple or complicated, are merely agents to employ it. Without it they are as useless as feet and fingers to the dead. And as the richness and variety of nature's works depend on her modifications and applications of force, so is the character of human arts determined by the motive agents employed. Till recent times three only were in use—animals, water and wind. Little over a century has elapsed since steam was introduced, and within the last fifty years it has imparted an impulse to human progress unexampled in the history of the past.

But the moral are not less than the physical effects of steam, and not the least is the belief it has induced that there exist, and the stimulus it has given to find out, other agents equally potent and more economical than itself. That the arts and manufactures of civilized nations have arrived at a stage when a more portable power is desirable, no one doubts; and that there *are* other available sources of force is unquestionable. The object of research, then, is a legitimate one, fraught, as it is, with promises of the highest import to humanity. No improvements in mechanism, however great in themselves and beneficent in their application, can compare with the discovery of a motor that shall supersede steam or be received as a coadjutor of steam.

The latest attempt at the great problem is that of Prof. Vergnes, of this city, who recently invited a large number of gentlemen to witness his solution of it at the Crystal Palace. One moment before mentioning what it is. All forces are traceable, directly or indirectly, to fluid or gaseous matter, and there are indications that they have relation to tenuity in the motive matter. At all events, the imponderable fluids—if electricity, galvanism, and their cognates, be such—infinitely surpass in velocity and intensity all others.

The motor of Professor Vergnes is an electro-magnetic one. Imagine a number of soft iron arms, resembling oar blades, revolving on a horizontal axis, with their plane faces close to, but not touching walls of wire, which walls are electro magnets, and you have the outlines of the machine. Nothing could well be more simple—a feature of the device highly creditable to its author. There were two machines in operation—a table model and one estimated as equal to about ten horses. It is said to run at a cost of only $2 per working day of ten hours, and that this is diminished one-half by deducting the value of the sulphate of zinc produced by the battery.

Professor V. is a gentleman of talent, and a pleasing demonstrator. By diagrams and algebraic formulas he explained the principles and advantages of his discovery, and ingenuously invited his audience to scrutinize every point, as truth alone was his object. Nothing else can endure. The exposition was, however, rather of the construction than a demonstration of the *practical* value of the motor. For this purpose he is preparing it to saw timber, when it will be ascertained to what extent it posesses the most essential of qualities.

There is one point which, from its practical bearing, we would submit with deference to Professor V. It is this: Passing over the number of batteries (there were twenty, each containing sixteen rather large cells,) and the increasing ratio of velocity over the number applied, in each case, was not every increase of velocity accompanied with *a corresponding expenditure of the motive materials?* A steam engine, at ordinary work, draws on the boiler, say twenty times a minute, and when its velocity is doubled its drafts on the boiler are doubled—the communication being opened twice for each revolution. Does not the same thing occur with the new machine. The batteries are charged with motive materials like boilers, and is not virtue drawn from them at every revolution of the axis, no matter what the velocity may be?

PURE AIR AND SLEEP.

Dr. Arnott, in his *Physics*, states that a canary bird suspended near the top of a curtained bedstead where persons are sleeping, will generally be found dead in the morning from the effects of carbonic acid gas, generated in respiration. He set forth this as a fact, to show the necessity of breathing pure air in sleeping apartments and a sweeping argument against the old-fashioned high curtained bedsteads.

A healthy man respires about twenty times in a minute, and inhales in that period about seven hundred cubic inches of air; this he exhales again in the form of carbonic acid gas and water, which vitiates the atmosphere. Three and one-half per cent. of carbonic acid gas in the air renders it unfit for the support of life; this shows how necessary it is to provide a supply of pure air for the support of respiration.

There are also certain facts which go to prove that more danger exists—that there is a greater proneness to disease—during sleep than in the waking state. In Turkey and Hindostan, if a person falls asleep in the neighbourhood of a poppy field over which the wind is blowing towards him, he is liable to "sleep the sleep which knows no waking."

The peasants of Italy who fall asleep in the neighbourhood of the Pontine marshes are invariably smitten with fever. Even travellers who pass the night in the Campagna du Roma inevitably become more or less affected with the noxious air, while those who pass through without stopping escape the marsh fever. Those who have travelled in tropical climes, and who have been attacked with bilious fevers, uniformly ascribe the cause of their sufferings to night exposure in the open air.

An English traveller in Abyssinia has asserted that he could live in health in that sickly climate, by a proper selection of the situation where he slept every night.

There is abundant evidence, it would appear, which goes to prove that by proper attention to the place where, and the circumstances under which persons sleep, many diseases may be avoided.—*Scientific American*.

The Sultan's Treasures.—Marshall Pellisier, during his stay at Constantinople, was conducted to the kiosk which contains the royal treasures of the Turkish Sultans. The visitor's attention is first attracted by the throne of Kei Kaouis, Sultan of Koniah in 1245, which is of solid silver, covered with enamelled designs of the greatest beauty, representing the thrones and ornaments of the Kings of Persia in olden time. It is surrounded on every side with cloth of gold, and the cushions are of crimson velvet, embroidered with pearls and precious stones. Close to it are to be seen the shield and sabre which Sultan Amurath wore when he made his triumphal entry into Constantinople after his expedition. These arms are dazzling with diamonds. By their side is the precious box which contained the Koran, and which the Sultan Suleyman carried with him during his campaigns. The lid is covered with jewels of price, among which is a turquoise in the shape of an almond of immense size. To the end of the cord which served to suspend the box is fixed an emerald as large as a hen's egg. In another part of the room are arranged the aigrettes which the Sultans formerly wore in their turbans on days of ceremony. The emeralds, rubies, and diamonds, collected together in these ornaments, are of a size and brilliancy to excite wonder, and it may safely be predicated that Western Europe can not boast of jewels to be compared to those handed down by the ancient Sultans.

Thy will be done.—The late Mr. Kilbin of Exeter, writes, "I knew a case in which the minister, praying over a child apparently dead, said, 'If it be thy will spare———.' The mother's soul yearning for her beloved, exclaimed, 'It must be his will! I cannot bear *ifs*.' The minister stopped. To the surprise of many, the child recovered; and the mother, almost suffering martyrdom by him while a stripling, lived to see him hanged before he was two and twenty. O! it is good to say, Not *my* will but *thine* be done."