from being thrown overboard. When the slaves were captured she had no crew on board, and of course no one could be punished for that most barbarous enormity. On the point of the withdrawal of the mails Post-office contract from Zanzibar, if true, it was the most disastrous thing that could have been done. It was said it would not support the trade opened by the enterprise of British merchants, it was established that a good people in England would cure to invest their capital in a place from which they could not expect any return. Nothing was more discouraging to the traders than that they should have to rely upon foreign steamers. But it was always the lead was wet blanket which was thrown over our trade, a system creating of course the greatest irritation and disgust. If that course were to be pursued, how could the trade of England be expected to increase? He would also ask what was the effect of the climate of those countries on Europeans.

Mr. Holmwood, in reply to the first question asked, said, only one import tax could be levied by the Sultan, and that was an ad valorum import duty of 5 per cent., and it would be quite impossible for the Government of the Sultan to go on if that tax were withdrawn. The revenue derived by the Sultan from those duties was about £6,000 per annum; but as yet only a small part of the produce had been developed. With that £6,000 the Sultan paid his troops, and had undertaken very important public works. Some roads had been derived by the Sultan from his private plantations, and until lately he had almost entirely devoted it to the public good. Five or six steamers which he had bought from the F. & O. Company, were now being run in the trade between Calcutta, Bombay, and Zanzibar, and they brought over grain which was sold at the same price as it was sold in India, the Sultan thus defraying the cost of transport out of his private resources. Beyond that sum there was not £500 a year—there was no revenue whatever for developing the country, and that was why he so strongly advocated that British merchants should purchase the stores there. The shipping was very cheap. With regard to the second question, it was true that the British merchant [H.E. and L., London] had withdrawn from Zanzibar, but that vessel was in a rotten state, and having become dangerous to the shipping on board, the Government could not have done better than remove her. However, the Sultan had been so loyal to his undertakings, that even among the most smugly交易的, the trade in slaves, by the running of the slave show, had been absolutely abolished, so far as Zanzibar vessels were concerned, with the accompanying revolts and atrocious scenes. He did not believe the Government had revoked the mail subsidy, certainly the Foreign-office and the Government itself, having given its consent to their withdrawal, and he could not think the statement was accurate. With regard to the climate, he had been in the country for twelve years, and it certainly was trying, and people out there required change, but the prevalent ideas relative to East Africa on that score were very much exaggerated. No young Englishman or European in the intellectual world had, in his thought, discovered some coal very good for lighting purposes, and for mining with other coal. It was not very convenient, but perhaps, it was that the Portuguese had their eyes open, though he could not say, from what he had seen of them on the West Coast, that they had acquired any great stock in trade to be taken away from them. They ought also to keep our eyes open, that distinguished statesman and diplomatist had said—"We neglected our hold was value and vigour," and that remark might be applied to all parts of the world where we were. He did not mean that as an incentive to aggression, but rather as a prophetic. In conclusion, he expressed the hearty thanks of the meeting for the interesting and able paper they had heard.

Mr. Holmwood briefly acknowledged the complimentary, and the proceedings terminated.

FOURTEENTH ORDINARY MEETING.

Wednesday, March 11, 1853; FRANCES GALT, F.R.S., in the chair.

The following candidates were proposed for election as members of the Royal Geographical Society—

Clara, Octavia Leigh, Hindley-cottage, East Sheen, S.W.,

Gilmour, William Henry Sainsbury, 9 Old Jewry, Chancery, E.C.

Kirkby, John, 29 West India-road, E.,

Kersley, Charles Frederick, 47 Lower Belgrave-street, S.W.

MacWilliam, George, Greenhills, 92 Bartlett's Row, E.

Patterson, George, 85, Cafleton-rd., Tulsehill, N.,

Park, James, Can-hall, Wylies, near Bradford.

Ward, Howard Charles, Yeoman, Lytton, Hants.

Watson, John, Cement Works, Gateshead-on-Tyne.

The following candidates were balloted for and duly elected members of the Society—

Chawke, John, 33, Blackheath, S.E.,

Mundford, Thomas William Bassett, 1 Glendale-villa, Sylvan-road, Etonne, E.

Ryall, Thomas, 55, King-street, S.W.,

Scholars, Ludow, 40 Holborn-viaduct, E.C.

Smith, Justh, Park-end-road, Gloucester.

The paper read was—

EXPLORATION. AND THE BEST OUT: FIT FOR SUCH WORK.

By MAJOR-GENERAL THE HON. W. FREDERICK.

I think it best to precede this paper with the Latin expression, Quad homines de sentimento, which may be very freely translated—a lot of men afford a quant measure of opinion. But, seriously speaking, it would be quite absurd for any one individual at any one point of the subject's existence to attempt to lay down the law as to how exploration should be carried out.

The most I can attempt to do is to speak in general terms on the whole subject, using such knowledge as I have gained during my own travels in various parts of the world. In order to treat the subject as exhaustively as the limit of time at our disposal will admit, it will be well to divide it under two headings.

1. On exploration generally, and the manner in which the subject should be considered.

2. On the outlook recommended for use by explorers under various circumstances.

The first heading we must again subdivide into—(a) Scientific explorations, (b) Commercial and geographical explorations, and (c) Military explorations. Explorations purely out of a love of adventure.

Now, scientific explorations differ very exceedingly in their intention and their scope. Their scope depends again upon their intention, and their duration depends upon both British subjects. For instance, we have heavy responsibilities in connection with them. The influence of those native merchants was still in its infancy. As had been stated by one of the Zanzibar merchants at an interview narrated that evening at the Ful Mal Gazette, "For every foreigner in the country, there were a hundred British subjects, and for every ace held by foreigners we hold a thousand." That description gave a very correct idea of the position of the colony of merchants as Zanzibar, and our responsibility towards them was very great indeed. We should not adopt a deprecating policy trying to prevent any other nation settling on the East Coast of Africa, but we should not allow obstacles on the rights of our own subjects. The colonising capacities of Indians were very remarkable, or, rather, their facility for settling themselves down in the colonies. It was a singular feature in the native character. Therefore, although he knew personally nothing of Zanzibar, he knew the people who went there tolerably well, because they were the very class found in and about Zanzibar, among whom the Indians of Zanzibar were found in the colony of Mauritius, and it was wonderful how they adapted themselves to the place. Two-thirds of its population were composed of them; they went as mere coolies, principally from the south of India, and after a period of prosperous work, and his return, and from which he found it most difficult to make a selection. It would be useless to mention in detail to a general audience the various instruments, appliances, and chemicals, which should b:
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taken by the explorers in search of botanical, horticultural, geological, mineral, or zoological specimens. Specialists have each their individual difficulty to meet almost every case. The data are sufficiently explicit and difficult to scarce the manner in which an exploration of such a nature is to be carried out or to establish some one or more subsidiary bases of operations. If the reply be in the affirmative, then comes the question: When shall I come back? For what shall I come back? If some shall be stored there? (c) How shall these be conveyed thither? The answers to these questions must depend upon the nature of the exploration, i.e., whether the intention is to return to the place of starting or to a different locality. The question is not to be answered by the mere fact that the materials are not too large to be sent, and that they should be rectangular and non-cylindrical in shape. Essence of beef (Bos taurus) or other of a similar nature is invaluable, and these are the most valuable form of meat. Flour and oatmeal should be packed in block tin boxes, of various sizes, containing from 1 lb. to 5 lbs. each, sugar should be dried or powdered, and packed in 1 lb. rectangular cisterns, tea—the best for the purpose is Gourdy's compressed tea; it is manufactured in tablets of 1 lb. in weight, and sulfidized like chocolate tablets, into eight portions, one of which is ample for tea for three or four people. Being wrapped in lead paper, it stands any climate, and I have known it to keep good for five years. Salt should be kept in stone or thick glass jars, with screw or cork-lined stoppers. Lard should always be taken, and should be kept in small boxes capable of being rendered air-tight. There is an excellent form of compressed and dried vegetable tablet manufactured in France; and there is also a preparatory form of dried turkey-corn in powder. No expedition should be without these to keep off scurvy, that terrible scourge and bugbear of all explorers. In addition to this provision of water, each animal should have a canvas water-bag slung by a strap round its neck. These bags are not waterproof, and each should have a small neck of an old soda water bottle sewn into the orifice used for filling it; the vessel can thus be secured against its being cut from the animal carrying it. Water-bags on the same principle, only much larger, are in use for well-schooled, feathered, and feathered-haired birds, by strapping on iron rings to a pack-saddle. When the first water has a nassy flavour; but the bags soon take on the taste of the water, and the men are indispensable on long waterless marches in a hot climate.

WHEN ON THE SUBJECT of water, it may, perhaps, not be out of place to impress upon you the necessity in observing the greatest care in the selection and use of it, and generally in the after treatment of water. As a general rule, the only water which can be drunk with safety, without fear of consequent ill effects, is that which springs directly out of the ground, from rocks, or which is obtained from a permanent running stream, the bed of which is not exposed, and which is not used for watering the banks of which there is no excessive vegetation. Even in the case of water issuing from rocks, care must be taken to avoid water issuing from copper pots or lead, and in these cases a small quantity of sulphuric acid would at once detect the presence of the mineral in dangerous quantities, as the water would become discoloured. In most countries subject to drought, the water requires special treatment; treatment by boiling or filtration is seldom practicable, or even safe. I have come across it as thick as pea soup, and sometimes covered with a growth of green or red weeds. In such cases, the first operation is that of skimming with a skimmer made out of a forked stick, or some piece of linen stretched tightly between the forks. This scoria, scater a pinch of powdered alum into the vessel in which you have collected the water, and the weeds will then be balled, and skimmed, and the scoria, and then only when so scoria arises on the water is it really safe to use it. For it is clear that a good plan always to fill the kettle—or, still better, the cooking pot—with water the last thing at night, and put it at the edge of the camp fire to simmer [not to boil], and always to fill up the water bottles and kettles from what is left over from each morning's cooking. It is also a good plan never to allow the kettles to cold water in the tropics. Each man should carry in his pocket half a handful of oatmeal, and put a pinch in his panikoua of water when he fills it for drinking.
one of knitted worsted, the other of flannel about a quarter of a yard wide and three yards in length to be placed in the bag fastened with a safety brooch. Six silk-kerchief
handkerchiefs (white), and of the thickest and heat quality. They are useful sometimes when travelling in the very early morning and a
curtain against the sun’s rays, which at that hour strike with great force on the eye and side of the neck which are, I believe, nothing except a compressed form ofcamp-
Lough’s pyretic saline.

Before mentioning the examination of the pro-
cedures de bouche, it is well to add a list of the medicines and surgical instruments necessary to every expedition—Rubarb, essence of gape and
about 100 pills of colchicum and hem-
but about double the quantity of quinine-pills, made up in small doses of three grains each;
some quinine pills; a couple of
admiral’s dose of Dover’s powders; four bottles of sweet
spirits of nitre; about 300 pills of pellagrin in small doses; camphor, and chlorodyne.

Two lancets, two abscess knives, two catheters,
two enemas; some surgical needles, and some silver wire thread for sewing wounds; a silver pro-
and two steel artery forceps; a syringe
with various nozzles for various uses. Sticks,
plaster of various sorts, and some prepared lint. A strong oxidized wool
and some vaseline, carbolic acid, and carbon soap. All
the medicines should be in glass-stoppered bottles, the
stoppers having been lubricated with pure
glycerine previous to insertion. The medicines,
and, should be divided into at least three portions, so that each waggon or each de-
tachment of the party had a complete set for about
everything. There is no greater mistake than
that of having everything in one medicine chest. All
bags should be divided, as in a very dry climate many
very dry climate boxes are apt to come to
pieces with the rough handling that every
package gets at the hands of those who often have
to do the packing and unpacking of animals two or three times each day.

Clothing.—Take as little as possible when standing in the country; you can get most articles necessary for explorers at the place
from which the waggonos would make their start.

Of personal attire, the following are those which I
consider sufficient for most expeditions:
Six shirts made of grey flannel, with two
buttons on each wristband, to admit of them being more or less removed for light. Four long
moor’s drawers, double seated and double down the inside of the thighs. Four pair of thick
knitted woolen long stockings. Two chokers, belts,

CARDBOARD CANVAS, are the best and most portable form of bedlaid, and in a climate always habitable to
sleep on the level of the ground. The blankets
should be loosely sewn together round three
sides, and thus arranged to go into
This plan saves many
a sleepless night. Moreover, it keeps
snakes getting in between the blankets. A
wooden roof, with eyes round the edges, is
most useful, as when thrown over the ridge
gate of the hammock it can be lashed to the
sides of the hammock, and serve as a complete shelter over the hunter’s posts of storms or
wind. A light folding chair, or this be
too large, a beach seat with a back, is a great luxury,
and is almost a necessity in wet ground.

We have now to consider the selection of
such materials as are necessary to secure
supplies of fresh provisions to protect life.
First and foremost are the tepee and clamps. These should be
breed-leaders of the simplest possible
conception, and of 12 bore. Each gun should
be provided with 150 steel cartridges. These
are really indescribable, and are very
easily reloaded and recapped; and having a
female screw turned for a distance of 1 in.
in the cartridge, there is no difficulty in making
the words to keep in position.

For ammunition, shot of all sizes should be
taken except for use against man or
large animals. Powder should be
covered to two small copper magazines, each contain-
ing a couple of guns, and a puncher in half-pound can-
isters, fitting into the outer cylindrical copper
cases. These canisters should have screw
wedges to fit into the leather washers to them. The
canisters should always be kept full as long
as there is any powder in them. &hen a canister
was filled with powder it should be filled with
up cotton wool, or even crumpled up soft
paper. It must be remembered that any
expedition is liable to be reduced to pack animals and
the saving of the ammunition is so
great that everything which can be cut, soon gets
rubbed to the finest dust.

When it is known that there are rivers of
water, always take with you a casting
net, and even a small active net of some
threaded into. A large provision of hooks and fishing lines
is always taken, as they are not only useful in the obtaining
of a change of diet, but are very valuable as
an article of barter with natives.

For personal defence the best weapon is
the largest sized Colt’s revolver, with a stock
which can be used at the shoulder, and is
detachable. When on horseback it is best
carried in a bucket. Else our cavalry carry their
cartridges. A good one should with wonderful
accuracy up to 100 yards. A badly
piled up pattern of my own, I have found the best, as
it is light, and yet strong enough to cut away
dreadfully a fairly large branch. The sheath is
wooden, and there is room in it for a knife and
fork of steel, flat, with wooden handles screwed on
each side of the shaft. The blade of the hunting knife is made of extremely hard steel,
and the deep grooves cut out of the thickness near the
centre of the blade, so that, whilst the blade is
made lighter, it is also thereby rendered much
stiffer.

The other only stores which we have to review are those required in reference to isoc-
ination—i.e., spare harness, leather, rivets,
and copper wire for repairs, spare nuts, screws,
iron clips, splinter bar caps; tools, such as
ax, auger, centre bits and planers. These should
be tools, such as
be wood drivers, gimlets, awls, sewing needles, wax and strong thread,
felt for saddle cloths, roll of flannel for saddle
linings, raw green hide, and skins of dried
leather, half-inch iron rods, flat iron hooping for strengthening splicings, adze, jack planes,
spoke shaving, sharpening horns, files, punchers,
rpas, horse shoes, nails, and iron tools, felting and trimming mats, cross-cut saws,
hand saws of three or four, as well as
3 ft. gin., to 15 in., clamps, light and heavy
hammers, a few pairs of blacksmith’s pincers
and tongs, a couple of good bastard files,
assortment of nails, screws, copper and
st. D. buckles of different sizes, and straps
of various lengths and widths.

Having enumerated the articles necessary to an
expedition, the next thing to be settled is the
means of their transport.

It is rare that the only transport available
is man, but yet in some tropical countries,
covered with thick jungle, and where the
ground is too rocky and broken even for mules
or cattle, it is necessary to use men,
and men only, for this purpose. Chinese
and Japanese coolies will carry great weights
balanced on two ends of a pole, which rests
on the shoulders. Sometimes two
men will carry a heavy package for weeks at
a stretch, slung on a hambo. Some
in Africa and south America, the
natives carry heavy things on the top of
the head. When packages are carried slung, the
carriers should be made of hammocks, the
side and when not in use, they
are folded up and put into a bag.

Everything else wears out almost immediately. Every expedi-
tionary force should be provided with pack-
saddles, and the men of constructing,

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them. Personally, I prefer the airt in use by the Basque population in the Pyrenees. It has the advantage of simplicity and cheapness of construction, and is being easy to use and to repair. The best form of camel pack-saddle is the use employed by the Arabs, who contract within large bands and from Merza. Numismat of felt should always be used, both with saddles and pack-saddles. If carefully adjusted, they add to animals being kept in work with sure backs, should it be necessary.

The best form of bridle for all animals are those made entirely of tanned twine webbing. It is quite impossible to break them, and they are comfortable both to the heads of the animals and to the hands of the rider or drizzler. Besides this, they do not become slippery in wet weather, neither do they require any care to keep them in working order, as leather is, in hot or dry climates.

Ethiote, we have treated entirely of men or of animal transport; but there are very many countries where it is not only possible, but very advisable, to adopt wheeled transport.

The class of wheeled transport must depend upon the conditions of the country. The nature of the country to be traversed (I post roads as out of the question). 2. The quantity of stores to be transported. 3. The quantity and quality of the animals available for its traction.

It is now almost an exploded idea that a waggon must of necessity be a heavy, cumbersome, thick-walled and of such an roundness and weight as to be the herding of all its component parts. The Boers and others in South Africa still adhere to the old pattern, from habit and ignorance more than for any known reason. In America and in Australia, where the country is just as difficult to traverse, very much lighter vehicles are used with great success.

It is well to have several sizes and types of vehicles in every expeditionary outfit. Two-wheeled carts, long and broad, with drought, from the shafts and outriggers at the sides of the wheels, and, of course, the webbing of the axles, these latter being connected by a pinch. All wagons and carts should have lever brakes, capable of being thrown on and off by the driver. There should also be iron skids, or shoes and chains to be used if required, in addition to, or to replace the brake. The chief things to be borne in mind in the construction of vehicles for expeditionary transport are—

1. Great simplicity of construction.
2. Few parts and as possible.
3. Screw clips should be used in preference to bolts and naths, inasmuch as every bolt weakens the wood traversed by it, in proportion to the diameter of the bolt.
4. All parts should be made of such shapes that they can be readily copied and replaced by an unskilled workman.

5. The wood should be properly seasoned, neither so dry as to diminish its toughness, nor too full of natural moisture or sap, and no iron should be used except where absolutely incapable of being broken, or, where the use of wood will not affect its endurance. It may, however, be used where, in the event of its breaking, it could be easily replaced by wood.

6. The height of the axles from the ground should be the same, and not less than two feet. It is seldom that a waggon has to be turned at a very acute angle, therefore no great amount of "lock" is necessary. When making a track through a forest, much time and labour are saved by cutting a place off about four feet from the ground, as they are not nearly as large in girth at that height, and it is less fatiguing to the men filling them with cross-cut axes or saws.

7. The various parts of each waggon, except the bodies, should be interchangeable, so that in the event of a breakage the unbroken portions of the disabled waggon could be utilised in the repairs of others. This is very essential, as tending greatly to the reduction in the quantities of spare shoes.

We may, therefore, proceed to consider the construction of a waggon under the following heads—

1. The under carriage, including the wheels.
2. The mode of traction.
3. The body (including the till SEP necessary).
4. The means for suspension of the body.

As stated under paragraphs 6 and above, the parts should be interchangeable, and the axles should not be less than 2 ft. from the ground. It follows, therefore, that the wheels should be of the same diameter, and not less than 6 ft. in.

One of the great troubles in all explorations, especially in very hot and dry climates, is the difficultly experienced in keeping the wheels in working order. The spokes shrink; and if this is immediately found out and remedied, by caulking the gaps left in the wheel stock and filing with white lead and cotton waste, or with oxalum, wet and in, and the end of the spoke soon rots away. The slightest sign of looseness anywhere in the wheel must be at once attended to and remedied; green hide (cut in strips half an inch wide) wound in and out the spokes near the stock, greatly strengthens it, and of which the parts have begun to shrink. In some very dry climates, no wheel of ordinary construction will stand. On one of these journeys, I laid each night to take off all the wheels and lay them in water till daylight, in order to keep them together, and even with this precaution, the wheels eventually turned inside out and fell to pieces.

There is, however, a form of wheel which seems to me to be likely to last longer than the sort in ordinary use. It is that known as the Madras pattern, and the invention is claimed by an American named Sarven. The spokes fit round an iron stock, and are kept in position by two circular plates, bolted from outside to inside the wheel. This would admit of a broken or damaged spoke being easily replaced, or they could be wedged up from the centre by the insertion of thin bits of iron, tin, or some hard substance, between the inner spigot and the stock. Another difficulty arises from the difficulty of keeping the tires on. In England it is easy enough to remy the wheel, but here in which all tires have to lengthen. They can be cut, shortened, and re-shunk on the wheel. In exploring work, the tires are often occasionally permanently increased in circumference, as the wheel from use on hard roads here, but the wheels shrink away from them, and the same heat expands them, and so causes it to lose its contact with the felts.

The evil results arising from these causes may be minimized in two ways—

1. By constructing the tires slightly convex on the inner circumference, and by making a corresponding concavity in the outer circumference of the felts.

2. Sometimes, however, the shrinking is so great, that it becomes necessary to cut and shorten them. It is almost impossible to secure a good wheel to reline it, to have the two ends filed in a feather edge, brought through the felloe, and then finely clipped into the felloe at either end of the splice. The felloe may be wedged tight, and secured with a hoop or leather bag of hemp or other material.
adviseable to introduce a spiral spring at one end of the chain, to take off the sudden strain occasioned during the passage over very rough ground.

When driving four or more well-trained horses on broken ground, it is safer to use no pole or stirrup, but to use long traces made of green hide rope, kept up by loops hanging from the wheeler’s trace carriers, the leader’s traces being kept apart by means of very light hickory spurs, kept from slipping to the ground by means of the turned loops in the traces. This method of driving is especially useful on rough ground, and in case of necessity (as in snow or when the ground is soft) the pole and stirrup may be dispensed with.

I have found it very useful to have a strong swinging tray (made of strong ash planks one inch thick) fastened so as to hang between the axle-trees. These planks should not be too close together to prevent axes, spades, picks, and such like heavy articles being attached to the planks by means of rings placed in the planks, and passed through holes in the handles of the implements. The whole tray should be constructed so that it can be readily taken to pieces, and the planks utilised in the passage of boggy ground, or in the sandy beds of rivers, or in running the wagons up very steep inclines in soft ground. I have found them of great use, especially in deep ground, where they can be put under the wheels.

Another advantage of this arrangement is that in case of the traverse being obstructed, the wheels can be turned under the wagon, and the wagon can be carried on the planks as a raft.

The wagon should also be provided with a small water barrel, covered with felt, hanging under the wagon at the rear.

Covering.—Every ordinary wagon should have a tarp, to serve as a shelter from sun and rain. It should be made of waterproof canvas, and have a small water barrel fastened to the wagon on the pole. The pole and cover should be easily detachable.

Hitching.—When replacing the wheels, it is best to place the pole in the center of the wagon, and to place the pole and cover in such a way that the wagon can be easily turned under the wheels, and the wagon can be carried on the planks as a raft.

Fitting.—The driver’s seat should be provided with a canvas bag, in which to place the tools and materials necessary for maintaining the harness, or any part of the wagon. The box should be sufficiently large to accommodate the tools, and the tools should be easily accessible. Each box should have its own cover, and the tools should be easily accessible.

Parachute.—The parachute is a very useful invention, especially in case of necessity (as in snow or when the ground is soft) the pole and stirrup may be dispensed with.

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regards durability. He would also insist on the point that, given good material and workmanship, the wheels should make wheels very heavy on account of the roughness of the ground. In a matter of this kind the expense of construction should be secondary consideration. With regard to axles, it was a question whether common axles, or the Mail Car springs, should be used. Common axles were extremely simple in construction and not liable to accident, but, on the other hand, they suggested a precaution for the morning, which must be a disadvantage whenever there was a hoist of importance. Mr. N. P. Colling said, the Mail Car axles were not too delicate in its movement, it might be a long time, as some in two months would be too often to lubricate it. He was not prepared to agree with General Fielding's suggestion that tires should be made conical and the fenders concave, because the tyre being put on red hot, there would be no possibility of forming the edges of the fenders next to the tank surface, and thus all the advantage would be lost.

Mr. J. Matthews remarked that the means of transport must vary with the character of the country, and, as a matter of fact, the countries in which you could travel on wheels at all were very limited in extent. In the Sudan and in great part of Syria all transport had to be effected by means of beasts of burden.

The Rev. W. L. Berthoud said there was nothing very remarkable in the whole boats used on the Nile, either in form or material, except that the material used was so scanty that the Canadian bankrupted its bravery, and the frequent accidents which had occurred in consequence of the manner in which they were built. But the builders were regarded as certain limits, the building being specified to weigh not more than a ton a half, and to be 30 ft. long, and not 30 ft. a crown which no boatbuilder could get over. The wood was not so much at the expense of the iron, but was a good deal at the expense of the success of such terms as could be anticipated for the time being. He had seen the banks of the river, but had not yet heard a word about them; they were the same size as the other boats; but were similar to some exhibited that evening, and were clearly the same as those in three sections instead of two, and when collapsed were only about 10 ft. wide. Each part weighed about 25 cwt., so that they could be rolled out of the water when needed, and raised, carried to any required distance, and裳panied again. Seven years ago, the great man who they were all hanging, his friend General Gordon, had several of these boats in the Sudan, and found them very useful, and 250 of them made in two sections had been supplied for the French service. They were admirable for tropical climates, so no boat builders. They were from 30 ft. to 50 ft. in length, in carrying up heavy machinery for the gold mines, and he found that none would stand the weight of the previously described boats, which could be erected in a few seconds.

Mr. H. Logan said he had been, for forty years, sending carts made in England out to the West Indies for carrying coal, and experience connected with the sugar industry, and he could state most positively that there was not a cart-builders in England who could make one in the same time. Mr. Hopper could not make wheels which would stand the load and tear of the cart, but General Fielding's suggestion that tires should be made conical and the fenders concave, because the tyre being put on red hot, there would be no possibility of forming the edges of the fenders next to the tank surface, and thus all the advantage would be lost.

The Rev. W. L. Berthoud said he doubted if Mr. Logan had ever seen his boats, as they were not supplied to any ships crossing the Atlantic; though they were recommended by the present. The scow preferred them as they were set up instantly, and sailed faster than any boats in the world. One had recently made an expedition from the American coast to Southampton, and the last 150 miles was at the rate of ten knots an hour. That was a boat which had been carried across by men. He had been himself in Algiers Bay in a gale of wind where the Spartan had to turn two boats in for two miles and a half from shore, and the only boat which could be turned to go off to the land was a Berthoud-boat. That boat was now six years old, she had never had a failure, and was not of any worth of repairs, and was as good now as she was then.

Mr. J. A. Mauger, referring to the question of water supply, and to the statement that mechanical friction was inexplicable, had his filters been supplied to the Government for use in Egypt, and had proved thoroughly successful. He was now supplying 100 for carrying on pack-saddles, to each of which was used, to prove its use if 100 times, and another being constructed for camp use, f. 1 ft. f. and f. 1, which would filter 1,000 gallons per hour.

Major-General Prinsep, in reply, said there was no water at all on the Lower Nile suitable for boat-building; on the Upper Nile, the boats were built of wood, the supply of which was very limited, as well as the number of boat-builders, and, therefore, as time was of the utmost importance which should be used, nearly thirty of the boats should be built in this country and sent out. He had not thought it necessary to refer to scientific instruments, their use being so obvious; among them was a man who goes in a strange district, at some distance from the nearest town where there were no roads, and of which, perhaps, there was not even a map, he would take some kind of sextant so as to ascertain where was each day. The particular form of compass he preferred was shown downstairs, the dial being made of mother-of-pearl of different colours, which could be always seen, and did not cooke. He always weighed his things when starting, in order to see properly distributed. When, with regard to axles, he preferred the common one, with all the delays it might occasion. The simpler the construction of such a thing the better, and there was always time to grease the axles when necessary. He had already discussed the tires with Mr. Hopper and Mr. Robinson, and was still rather inclined to it, though he might perhaps be wrong. He entirely agreed that a wagon should be built of wood of the country, and in Australia he had his wagons built there, though for the wheels he preferred his own, on account of its toughness, even if not so hard as iron wood, jarry, and some other native woods.

The Chairman then proposed a vote of thanks to Major-General Prinsep, which was carried unanimously, and the meeting adjourned.

The paper was illustrated by articles exhibited by the following firms:—


J. C. Coddington, and Co., 14, Piccadilly, W.—2½" Rustle" saddle and hand-printed waterproof poncho and ground sheet; regulation bed; Ashbutter harness; improved harness; "The Land and Water" bag.
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Small size double-coated "Ridge" tent, four-fold, for hot climates, "Sustain" pattern; folding lamp and Safety Mantle, clips, and photograph of various forms of tents.

Firmers and Sons, Limited, 151, Sterne, W.C.

 Patent-Universal" pot-box for cooking or use as a steam inhaler or fumigator; new "Metal- glass" wicker and felt-covered water bottles.

J. Forbes-Watson, L.L.D., M.D., 16, Pallington-

road, Aylsham, E.C. Patent felt baskets with liver and sponge lining for protecting the head from the heat of the sun in tropical climates.

L. Young, 151, Bond-street, W., Colonial breech-loading gun for shot or ball (with hammer); slitter (hammers); patent four-barrelled hammer pistols, non-fuming, smooth bore, rifled, to take regulation ammunition.

P. A. Maigmien, 32, St. Mary-at-hill, E.C.-Patent "Filter Rapid", in various forms suitable for home and transport.

Patent Waterproof Paper and Canvas Company, Limited, Willows, N.W.-Samples of paper and various treated by the Company's patent waterproofing processes. Photographs and models, showing various applications of the waterproof paper, 8c., to buildings.

Pfiel, Stedall, and Son, Bond-street, Bloomsbury, W.C.-Warner wheel, having a starch or centre similar to a plain wheel, but with the addition of an iron mounted band, through which the spokes are driven into the wooden stock.

Siliciated Carbon Filter Company, Church-nard, Battersea, S.W.-"Canvis" travelling filter; pocket size.

S. W. Silver and Co. 67, Cornhill, E.C.-Regina

bromide; canteen bottle and felt-covered water bottle; six brass cistern with enamelled fittings, cooking sauce, &c.; anti-cholera, sneeze, and other bottles; pith Infusoria for tropical climates. Mexican poncho, forming combination coat and ground sheet; Australian saddle, tethers, rope, water bottle, and rice hick; pack-saddle; explorer's tent in sheet; potable leather medicine case.

Society of Arts, John-street, Adelphi, W.C.-

Model of a Cape waggon, presented to the Society by Dr. R. J. Mann.


Waiters' Department, Woolwich Arsenal.-Wheel used for gun carriages.

J. P. Wright, 3, Park-ned, Reehill, Surrey.-

Patent special explorer's folding seat; model of a collapsible boat.

Miscellaneous.

INTERNATIONAL INVENTIONS.

H.R.H. the Prince of Wales has fixed Monday, May 4th, for the opening of the Exhibition.

A special railway guide, under the title of "International Inventions Exhibition Railway Time and Guide Book," is being prepared by Mr. J. R. Somers Vize, the City and official agent of the council.

The first route, to the number of a quarter of a million, will be distributed gratis, copies being sent by post to householders living within 10 miles of the Exhibition. Tickets for the Grammar School of the railways and stations in and around London, and under the name of each station, the average number of trains running thence to the Exhibition between midday and 8 p.m., the cost, first, second, or third class, of the whole journey, including admission to the Exhibition, the average time the journey takes, the point at which the visitor would enter the Inner Circle from the suburban line, and the time at which he must leave the Exhibition in order to catch either of the last two trains by which he can get home.

The plan of the book is to show an extent of arrangement of a form of work of the author, "The Correlation of Knowledge," so new out of print, but the substance is entirely new. In his introductory chapter, Mr. Siddons discusses the question of the club system that which the course, and he then devotes some space to the consideration of the practice of calculation. Two chapters are devoted to the method of calculating from monkeys to popoloe, one to food furnished by the feasted tribes, one to rice, and one to reptiles, snakes, and amphibians eaten fresh. The food products of the tea are discussed in two chapters, and a short distance devoted to the making of rice in Cornwall: the distance is driven between the footpath.

Correspondence.

TEMPERED GLASS.

In your report of Mr. Frederick Siemens's paper read on February 26th, and in the discussion thereon, the expression is given that the process of tempering glass, as carried on at the Wedgwood Glass Works for the last six years, was carried on at Stockport in 1777.

Notes on Books.


The plan of the book is to show an extent of arrangement of a form of work of the author, "Correlation of Knowledge," now out of print, but the substance is entirely new. In his introductory chapter, Mr. Siddons discusses the question of the club system that which the course, and he then devotes some space to the consideration of the practice of calculation. Two chapters are devoted to the method of calculating from monkeys to popoloe, one to food furnished by the feasted tribes, one to rice, and one to reptiles, snakes, and amphibians eaten fresh. The food products of the tea are discussed in two chapters, and a short distance devoted to the making of rice in Cornwall: the distance is driven between the footpath.

MEETINGS OF THE SOCIETY.

ORDINARY MEETINGS.

Wednesday evenings at Eight o'clock:


Papers for reading after Easter:

"The History and Manufacture of Playing Cards." By George Culver, 1883.


"A Marine Laboratory as a Means of Improving Sea Fisheries." Professor E. R. Lankaster, M.A., F.R.S.

"Recent Improvements in Coastal Signals." By Sir J. H. Doughlas.

"The American Oil and Gas-fields." By Professor J. H. DeWaw, F.R.S.

INDIAN SECTION.

Friday evenings at Eight o'clock:

March 13th.—The Present Condition and Future Prospects of Female Education in India. By Manzour Mohammed, late Students of the Alexandra Girls' English Institution, Bombay.

April 17th.—The Architecture and Art of Western India. By J. W. D. B. J. M., F.R.G.S.

May 8th.—The Antecedent and Modern Methods of Taming Elephants in Southern India. By Mr. J. G. Smith, F.R.G.S.

May 15th.—The Golden Road to South-Western India. By R. W. Douglas, Professor of Chinese at King's College, London.

FOREIGN AND COLONIAL SECTION.

Tuesday evenings at Eight o'clock:

March 17th.—The Congo and the Conference, in reference to Commercial Geography. By Commander Cameron, R.N., C.B.

March 21st.—"Kia and the Surrounding District of Equatorial Africa." By H. E. Johnson.
