

**THE GREAT SHIELDED LOCUST OF PAPUA.**

The insects of Papua, or New Guinea, as that vast island is commonly called on English maps, are comparatively little known; yet they appear to rival in strangeness and beauty of form and brilliancy of color the better known birds of that tropical region, typical examples of which are seen in the birds of Paradise. Here the magnificent green and yellow ornithoptera, or bird-winged butterflies, find their richest development. Wallace calls them the princes of the butterfly tribes; and they are as remarkable for their great size as for their singular markings and magnificent coloration. Here, too, are found the largest and most beautiful of the clear-winged moths, and their handsome rivals among the greenmoths. Many species of beetles of large size and the most brilliant metallic luster also abound, almost all of the orders furnishing large or extraordinary forms. The same is true of the locust or grasshopper tribes. The most remarkable of those thus far discovered is the *Megalodon ensifer*, or great shielded grasshopper, figured in our engraving, which we copy from *La Nature*. The glossy green wing-coverts when fully expanded are from 9 to 10 inches across, and beautifully veined in imitation of large shining tropical leaves. The thorax is covered by a triangular horny shield,  $2\frac{1}{2}$  inches long, with serrated edges, a wavy hollow surface and a faint median line, the whole closely resembling a leaf. The body is short, and, in the female, is terminated by a long, curved, sword-like ovipositor. The legs are long and strongly spined.

These insects are sluggish in their motions, depending for safety on their mimicry of foliage, their horny shield and wing coverts, and their spiny legs.

**Natural History Notes.**

*Prolonged Torpidity of Toads.*

—Professor J. A. Allen, of Cambridge, states that he saw a large number of toads taken from the mud of a well which had been closed for twenty years. The animals were apparently lifeless, being quite motionless, but after being drawn up and exposed to the air their legs began to twitch after a few moments, and their eyes slowly to open and close. In three or four minutes they so far recovered as to hop about, and shortly after became as bright as if they had not been sound asleep for the last score of years. The temperature of the mud in which they were found was about 45 degrees, which was no doubt maintained throughout the year; and, as this corresponds very nearly to that of ponds where they hibernate in winter, Professor Allen thinks that this prolonged torpidity was caused by a continued uniformity of temperature, and that he sees no reason why it should not have been protracted indefinitely.

*The Fruit of the Fig Tree.*—The fruit of the fig tree, or what we call the "fig," is very singular. In its earliest stage it is not unlike some other fruits, but during the course of its development it undergoes a strange modification. In its incipient state it is an aggregation of numberless flower buds, which in ordinary course would be developed on a long branch; but in the case of the fig the branch, instead of developing into a woody limb bearing flowers, grows up around the multitude of flowers, inclosing them in a pyriform receptacle, and forming a succulent fruit, inside of a woody branch. The fig that we eat, then, is not a fruit at all, properly so called, but a succulent branch. The real fruits are what are usually taken for seeds, and each of which was the product of a separate regular flower. This kind of fructification was called by the botanist, Mirbel, a *syconus*, which signifies in Greek "a fig garden."

*Snakes and Cold Victuals.*—The notion is a popular one that snakes never eat what has not been killed by their own agency; and, although such a belief is now known to be false by naturalists, yet very few of the one hundred and thirty two species of North American serpents have been proved, by actual observation, to have eaten any animal which they have not captured alive. A writer in the *American Naturalist* communicates the following notes on the

feeding habits of the common black snake (*Bascanon constrictor*), a species which has not hitherto been credited with a fondness for cold victuals. The writer states that last June he killed a garter snake, and happening to pass the place the next day, he came upon a black snake with about an inch of the tail of a garter snake protruding from its mouth. As the snake killed on the previous day was nowhere to be seen, he suspected the one inside the black snake to be the same. On removing the garter snake this proved to be the fact, as was evinced by the wounds he had made on the animal's head and body. The length of the black snake was a little less than three and a half feet, and that of his dinner twenty-two inches.

*Do Leaves Absorb Water?*—The question whether the green parts of plants can or do absorb moisture by their surfaces, as rain and condensed dew and mist, or even watery

corroborates M. Boussingault's late assertion that when leaves are purposely or naturally killed by excessive drought, they then do absorb water, as proved by the balance or otherwise.

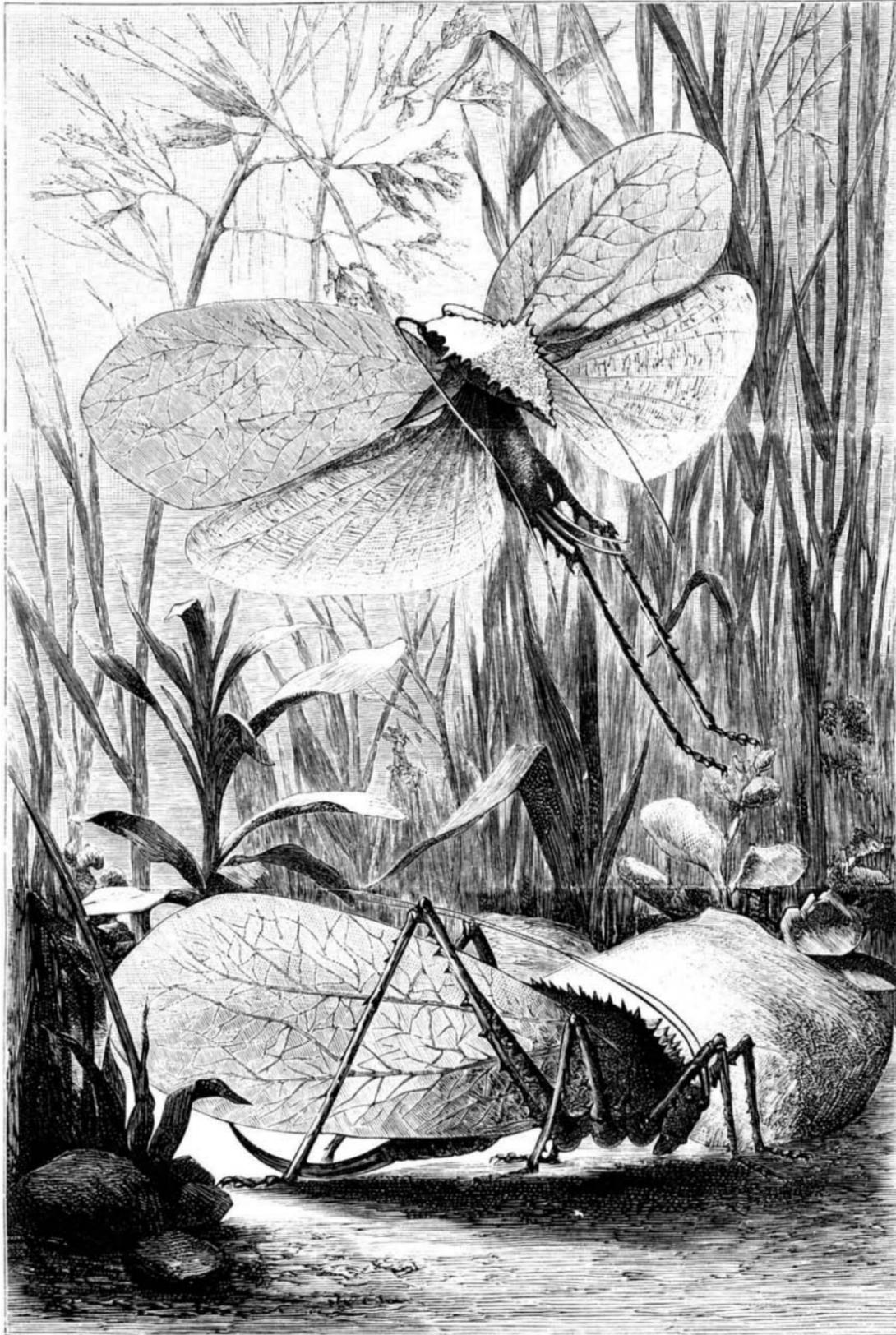
*The Botrychia and Ophioglossa not Ferns.*—In nearly all manuals of botany the species of *Botrychium* ("Flowering Ferns") and *Ophioglossum* ("Adder's Tongue") are included among the ferns, arranged as a sub-order under the name of *Ophioglossaceæ*. Mr. John Robinson, in the *Science News*, proposes the removal of these genera from the ferns, to constitute a separate order of equivalent value with the latter. The grounds upon which he urges this are: (1) That in the primary development of their fronds the *Ophioglossaceæ* are straight, and not rolled up, or "circinate," as the ferns are; and if the base of the plants be examined with the microscope the buds for several succeeding years will be found one

below another, still in an erect position, the rudimentary sterile and fertile fronds in the most highly developed buds clasping each other; (2) the growth of the prothallus takes place under ground, is very small, has but few root hairs, and is destitute of chlorophyl; while in the true ferns the prothallus is from three to four times larger, has a profusion of root hairs, contains much chlorophyl, and is developed above ground; (3) the spores of ferns are in cases developed from the outer layer of the cells of the frond, while the spores of the *Ophioglossaceæ* are derived from the inner tissue of the fertile spike or frond which bears them, and this more strongly resembles the production of pollen in the anthers of flowering plants. Mr. Robinson in a systematic arrangement would place his proposed new order in advance of both the ferns and equisetums. He adds, in conclusion, that the *Ophioglossaceæ* differ more from the ferns than do the equisetums, and as much as most lycopods, and that this fact should be more generally known to collectors.

*Termites kept in Captivity by Ants.*—Mr. H. O. Forbes states, in *Nature*, that while entomologizing in Portugal in 1877, in the vicinity of Cintra, he found the nest of the black ant (*Formica nigra*) under a stone. On turning it over there was, as usual, great consternation in the community, and he discovered that it was evidently caused by the fear least a colony of *Termites lucifugus* (which the formicas had enslaved) should escape. The "nigras" instantly began seizing the termites, driving them underground by the nearest orifices, in the meantime wrenching and pulling off their wings in the most unceremonious manner. In the nest there was also a great number of termite larvæ. The great object of the owners of the "location" seemed to be to get these larvæ underground as speedily as possible. The ants fell on them with great impetuosity, seizing them and dragging them, against the most strenuous opposition, into the nearest apertures of the underground home. Very often this opposition resulted in a long and stern fight, in which the larvæ were often

badly wounded, being sometimes deprived of their antennæ, sometimes of half their jaws, and not seldom killed outright. Occasionally, however, the larvæ were victorious, in which case they did not make off, but remained perambulating the nest. The author saw one larva, at the end of a long fight, drawn by one of its antennæ, while it firmly held fast to a small ball of earth which had proved a vain anchorage for its feet, for larva and clod together were drawn across the top of the nest 5 or 6 inches, up the side  $1\frac{1}{2}$  inch, and away among the grass, where, losing the ball of earth, it seized a stalk so firmly that its abductor could not drag it further, whereupon, after reconnoitering the ground for a short distance, the latter disappeared, but returned shortly with a companion, with whose aid the larva was detached. This done, the helper returned home, while the abductor proceeded with his prisoner till lost to view in the grass, some 12 or 14 inches from where it originally started.

*Fresh Water Muscles and Ducks.*—Mr. Fred. Mather, in the *American Naturalist*, notes the curious fact that at a point



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vapor, has been a subject of controversy for the last one hundred and fifty years; but, it is to be hoped, it is now set at rest forever by the recent investigations of the Rev. Geo. Henslow. The earlier experimenters on this subject—Hales (1731) and Bonnet (1753)—were persuaded that leaves absorb dew and rain. For over a century the investigations of others supported this same view, until, in 1857, M. Duchartre, from his experiments, advanced a contrary opinion, and the one which is now held by most vegetable physiologists, and commonly taught in our schools. But, strange to say, gardeners in their every-day operations adopt a different notion from that prevailing in science.

Mr. Henslow, in his paper read before the Linnæan Society, shows that while it may be true that, as Duchartre has said, dew is not absorbed by saturated tissues at night, yet, on the contrary, his (Henslow's) experiments go to prove that absorption does take place at and after sunrise, when transpiration recommences, and an indraught is caused by the moisture, wherever lingering on the leaves. He further

near White House Landing, Virginia, on the Pamunky river, where muscles (*Unios*) abound, it has been found impossible to raise ducks, for the reason that at low water the ducklings were liable to be caught by the muscles and held until drowned by the rising tide. M. Mather adds that this information, which was given him by a gentleman residing there, was afterwards confirmed by the Pamunky Indians, who live on an island below White House, and who, with every facility for raising large numbers of ducks, do not keep them.

#### The International Fishery Exhibition.

The prospectus of the International Fishery Exhibition, to be held at Berlin, in April, 1880, under the patronage of the Crown Prince of Germany, covers the following:

##### CLASS I.—AQUATIC ANIMALS.

1. Alive or stuffed, preserved in alcohol, or represented in pictures, casts, etc.

2. Prepared or dried, salted, smoked, pulverized, preserved in tins, etc.; the various stages of preparation to be shown.

In particular the following are desired: A. Sponges, in their natural state and prepared for use, shown according to their various species and localities. B. Corals, in their natural state and prepared for use. C. Mollusca; oysters, samples of shells from the most famous localities, anatomy of the oyster in enlarged proportions; shells of all sorts, pearl shells, mother of pearl, manufactured; pearls, sorted according to their value; imitation of pearl, riverpearl shells; mother of pearl, from the same. D. Star fish, stella marina, sea urchins. E. Worms. F. Insects (chrysalides of insects, as destroyers of spawn, or as food for fish). G. Crustacea; various species of crawfish. H. Fish of all kinds and of all zones. I. Amphibious animals, tortoises, turtles, terrapins, etc.; tortoise shells in different stages of preparation up to the comb or boule furniture (for comparison's sake, also counterfeit tortoise shell); salamanders, frogs (spawn of frogs), snakes (skins of snakes). K. Aquatic birds (all sorts of birds detrimental to fishing, sea gulls, herons, cormorants, etc.) L. Mammalia (seals, whales), and manufactured articles from the same; mammalia detrimental to fresh water fish.

3. All kinds of products manufactured from aquatic animals.

##### CLASS II.—FISHING.

A. Fishing gear of every kind and from every country, or models thereof. B. Fishing craft of all nations, in models and representations. C. Fishing tackle and netting in different stages of preparation. D. Machinery and implements used for working up the raw material.

##### CLASS III.—PISCICULTURE.

A. Hatching apparatus in operation. All kinds of appliances and implements for the artificial breeding of fish, crabs, and shells. Boxes for conveyance of fry, etc. B. Models or drawings of appliances for protecting or perfecting aquatic animals (salmon ladders, etc.). D. Aquaria of all sorts. E. Illustrations of the development of some of the most important species, such as oysters, salmon, herring, crawfish, etc., shown in their various periods of growth.

##### CLASS IV.

Appliances in use for keeping and conveying freshly caught aquatic animals; also working models for such appliances. Conveyance of freshly caught fish by railway.

##### CLASS V.

Models and other representations of appliances in use for the preparation and preservation, by drying, salting, smoking, etc., of the produce of fisheries for commercial purposes (smoking houses, etc.), and for household purposes (fish kettles, fish dishes, etc.).

##### CLASS VI.

Models of fishermen's dwellings and costumes; also of fishing implements, not included in the foregoing classes.

##### CLASS VII.—SCIENTIFIC INVESTIGATIONS REGARDING THE STOCK OF FISH.

Physico-chemical researches; investigation of the bottom of the sea and lakes, shown by samples; aquatic plants in relation to fishing, herbaria, etc.; researches into aquatic fauna (animals of the subordinate classes preserved in alcohol, or prepared, etc.); apparatus and implements used in such researches.

##### CLASS VIII.—HISTORY OF FISHING.

Implements of fishing, original or in reproduction from the oldest times downward; also models, pictures, seals, emblems of ancient fishermen's guilds, etc.

##### CLASS IX.

Literature, statistics of fishery, maps showing the geographical distribution of fish.

##### CONDITIONS OF THE EXHIBITION.

1. Persons willing to exhibit should apply by letter, before January 1, 1880, to the committee of the German Fishery Society, which will decide on the admission of the objects announced for exhibition. The application should state the class, according to the above prospectus, and the amount and description of space required (whether on walls, floors, or table).

2. The committee of the German Fishery Society will defray all expenses connected with the general management and the internal arrangement of the Exhibition.

3. Objects accepted for exhibition should be sent to Berlin, free of charge, during the month of March, the committee undertaking the expense of carriage from the Berlin

Railway termini to the building of the Exhibition. The exact date and address will be communicated later. Perishable objects will be accepted during the course of the Exhibition only.

4. The committee will watch over the safety of all objects, without, however, holding itself responsible for losses or injuries by accident or robbery or fire, etc. On application the committee will cause objects to be insured against fire at its own expense.

5. After the close of the Exhibition all objects will be returned to the exhibitors free of charge, the committee defraying all expenses, with the exception of perishable articles, which will be disposed of at Berlin in accordance with such understanding as the committee may enter into with the exhibitor.

6. The public will be informed in a later communication whether an abatement of freights has been obtained, and whether prizes will be awarded.

7. All objects should, so far as possible, be marked with the exhibitor's name and direction. In cases where it is desired that they should be returned at the close of the Exhibition, an exact list must be forwarded to the committee.

#### Trademarks.

The law of trademarks is an outgrowth of the ancient law-merchant, which Lord Mansfield mentions as being a branch of public law which does not "rest essentially for its character and authority on the positive institutions and local customs of any particular country, but consists of certain principles of equity and usages of trade, which general convenience and a common sense of justice had established to regulate the dealings of merchants in all commercial countries of the civilized world." While a patent for an invention is a grant, a trademark is merely an arbitrary symbol—not necessarily new in its design—adopted by its user to be affixed to the merchandise which he manufactures or sells, for the purpose of indicating its origin or ownership.

Since the enactment of the registration act of 1870 there have been registered at the Patent Office 6,800 trademarks—for which the government has received fees amounting to \$170,000—836 of which were registered within the first six months of the year 1878. The value of a national trademark law is universally conceded. It accomplishes that which cannot possibly be effected by mere State legislation; for besides furnishing a single repository for these valuable aids in carrying on commerce, where all may go for reliable information concerning their history, it provides record evidence of title of a high character, as well as speedy and effectual means for vindicating a well founded title of this nature at any point within the territorial limits of the country. The importance of extending national protection, by legislative enactment, over this class of property has been recognized by many if not all of the commercial powers, and the trademark legislation in this country has done much to encourage manufactures among its citizens as well as importations into the country by foreigners. Treaties relating to this subject have been negotiated with Russia, Belgium, France, the German Empire, Austria, and Great Britain.

In view of the opposing decisions in the several districts, it is plain that until the disputed question shall have been judicially determined by the court of last resort, the federal officers, administrative as well as judicial—excepting those within the sixth circuit—must continue to execute the law as if its constitutionality had not been brought in question.

It has been shown that Congress did not create, or intend to create, any right of property in trademarks, it simply proposing, by its legislation, to regulate an existing right already guaranteed protection by the common law. If the legislation is a regulation of commerce it is authorized by the organic law, which confers upon Congress the power to "make all laws which shall be necessary and proper for carrying into execution" the power to regulate that subject. If it can be established that the protection of trademarks is a regulation of commerce, the legislation of Congress upon the subject can be fairly placed upon the commerce clause of the Constitution, which recites that "Congress shall have power to regulate commerce with the foreign nations and among the several States and with the Indian tribes."

"Commerce," as defined by Bouvier (Law Dictionary), is "the various agreements which have for their objects facilitating the exchange of the products of the earth, or the industry of man, with an intent to realize a profit." Burrill defines the term: "Commerce, in a strict sense, is traffic in merchandise; in a general sense, the interchange of goods, wares, etc." The trademark placed by the manufacturer upon his wares, in addition to its indicating to the purchaser the origin of the goods, is a guarantee of the excellence of the same, serving as a safeguard to the purchaser against the imposition of unprincipled manufacturers, and as a protection to the superior skill and industry of the owner of the same. Thus the trademark, which has been not inaptly called "a trader's commercial signature," facilitates the "buying and selling, and exchanging of commodities," which, as declared by the Supreme Court of the United States, "is the essence of all commerce."

It may be safely assumed that trademarks are as clearly an incident of commerce as navigation itself, and hence a proper subject for legislative regulation. The regulation of the subject by Congress is in its entire extent within the organic act. That it is so, as regards its operation upon foreigners, and as it affects the interests of citizens of different States, would seem to be so plain as to admit of no possible contradiction. —*Albany Law Journal.*

#### American Trade with Japan.

Our Minister to Japan, Mr. John A. Bingham, naturally takes a deep interest in the development of American trade with that empire. In a recent interview he said:

"The United States are ten days nearer Yokohama than any other country. We manufacture everything that the Japanese want, and if Congress gives us proper legislation there is no reason in the world why we should not command nine tenths of the trade with China and Japan. The finest silk in the world is grown in Japan, and their teas are used in nearly every household in America. There are very few power looms in Japan. The silk is nearly all manufactured by hand, and the advent of American machinery there would completely revolutionize the silk trade. Let Congress give us the ships, and the raw material can be brought from Japan and be manufactured in the United States at prices which would defy the competition of European silk manufacturers. I am no longer a national legislator and have no right to speak as one, but I believe it to be the duty of every member of Congress to do all in his power to promote commerce. Commerce is the right hand of civilization. Every legitimate means should be employed to build it up. There appears to be great opposition in this country to everything that looks like what is called 'a subsidy.' Look at England. She rules the commerce of the world, and she is constantly subsidizing every line of vessels that will develop trade between England and any foreign country. It would be idle to say that Congress is not aware of the commercial needs of America, and I suppose that in time the legislation will be given us that we need; but the sooner that legislation comes the more rapid will be our commercial growth and greatness."

America is becoming day by day a more important factor in the world's progress. It is to-day the richest country on the globe; but, said Mr. Bingham, with all our great possessions we cannot hope to become the leader of nations until we have commerce.

#### An American Industry in China.

A Shanghai paper describes a recently established industry in that city. The object is to preserve eggs in such a manner that they will be fresh and suitable for consumption, or more particularly, useful in cooking, for any length of time and in every climate. The eggs are procured by regular egg dealers from the farmers around, and are bought by the company on very favorable terms, sometimes dearer and sometimes cheaper; but always at a far lower rate than they would be procurable elsewhere. The quantity preserved daily depends more on supply than anything else. As many as 500 dozen a day can be done, if they are forthcoming. Nothing can be more simple than the process. The eggs are broken, and white and yolk together are emptied into a vast flat trough lined with lead, which looks like a gigantic billiard table. The trough is only a few inches deep; but underneath it steam is admitted by pipes from a large boiler, by means of which the eggs are desiccated until they assume the appearance of a kind of egg paste. There is a small quantity of sugar and salt mixed with it, and then it is drawn off and packed in tins, which are finally hermetically sealed. The business is entirely export, and almost exclusively to England, a small proportion going to San Francisco. The process is an American invention, and the company employing it carry on the business extensively in this country also.

#### Progress of the American Paper Trade.

In 1869 the United States exported \$3,777 worth of paper and stationery. Five years later the exports had risen to the value of \$662,332. The same year, 1873, our imports of paper and stationery amounted to \$1,326,460. Since then the imports have steadily declined and the exports have risen, so that last year the imports amounted to only \$135,487, while the exports rose to \$1,108,318. In view of these facts a contemporary sensibly remarks that the American people may well be proud of the wonderful success of its paper manufacturers. It has been accomplished only by the most determined efforts, the greatest enterprise, and the utmost sagacity. With the start thus obtained, with their abundance of material, with mills fitted up with the most improved machinery, and with skilled workmen, there is no reason why they should not soon control the paper market of the world.

#### Howe's Scales Abroad.

The result of advertising in newspapers circulating largely abroad is felt by many of our enterprising manufacturers. Among those who appreciate the advantages of seeking a foreign market when business is dull at home, is the Howe Scale Company, who have recently shipped one of their 10-ton stock scales, with a platform 22 feet long, for use in the Liverpool stock yards. They have also shipped to Paris 100 scales for use in that market; and they are setting some of their largest scales at the Hague.

#### The Treatment of Sprains.

Mr. Dacre Fox, an English surgeon to a large railway company, who has had considerable experience of this form of injury, says that in the more severe cases he finds that after a few days of fomentation the best treatment is regulated pressure by means of carefully adjusted pads and large plasters of a special shape, varying according to the particular joint involved. By this plan he feels sure that it is possible to control the effusions into the sheaths of the tendons and adjacent structures, to lessen the pain, and to shorten the duration of treatment.