A LADY.

I know a lady in this land
Who carries a Chinese fan in her hand,
But in her heart does she carry a thought
Of her Chinese sister, who carefully wrought
The dainty, delicate, silken toy
For her to admire and to enjoy?

This lady has on her parlor floor
A lovely rug from Syrian shore;
Its figures were woven with curious art.
I wish that my lady had in her heart
One thought of love for those foreign homes
Where the light of the Gospel never comes.

To shield my lady from chilling draught
Is a Japanese screen of curious craft,
She takes the comfort its presence gives,
But in her heart not one thought lives,
Not even one little thought—ah me!—
For the comfortless homes that lie over the sea.

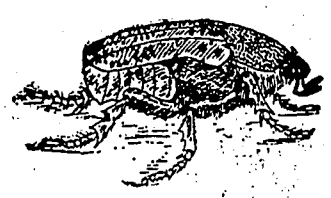
My lady in gown of silk is arrayed;
The fabric soft was in India made,
Will she think of the country whence it came?
Will she make an offering in His name
To send the perfect heavenly dress,
The mantle of Christ's own righteousness,
To those who are poor and sad and forlorn,
To those who know not that Christ is born?

Woman's Work for Woman.

CHAMPION ATHLETES.

If our readers were asked to name the animal which can carry on its back the heaviest burdens they would, perhaps, all choose the elephant. But if asked to name the living creature which is strongest in proportion to its own size and weight, there would be a difference of opinion.

Many would still mention the elephant, some the grizzly bear, others the horse or the ox; a few, perhaps, the tiger or lion. Florida boys and girls might name the land tortoise or "gopher," so common in that state, because they have seen one of these sturdy little fellows put out its feet and walk off with a man standing on its back.



Samson Beetle (twice natural size).

Possibly a few young naturalists would think of the Samsons of the insect world, the powerful beetles and ants which they have seen carrying loads of enormous dimensions in proportion to their own size and weight. A dwarf may be proportionally stronger than a giant, because it has less of its own weight to carry.

A man weighing one hundred and fifty pounds can carry three hundred pounds on his shoulders, while a horse weighing twelve hundred pounds can barely stagger under a burden equal to his own weight.

Similarly a horse is proportionately stouter than an elephant. An animal much larger than the elephant could hardly drag its own weight along, much less force its way through the tangled forests and jungles of India and Central Africa. A bird much larger than the condor would be too heavy to soar in flight. The whale could not sustain its own enormous weight except for the buoyant support of salt water.

To take opposite extremes, let us compare the ant with the elephant. A wall ten feet high will stop the progress of the elephant, but the ant can drag a dead fly three times his own size and weight over an obstacle which, in proportion to the ant's size, is greater than a four-story house is compared with the elephant's size.

Continued observation of feats of strength and agility in insects has led me recently to make experiments which, even in view of the facts just referred to, will be found surprising and interesting. Having noticed certain thick-limbed and hard-shelled beetles burrowing in the earth and moving heavy clods, I determined to make an exact measurement of the strength of these herculean fellows.

I prepared little sacks of the lightest muslin, and put into them exact weights of fine shot. Some of these sacks held a quarter of an ounce, some half an ounce, others one ounce, and a few two and even four ounces each. I filled the sacks loosely, so that they would lie firmly on the back of an insect without falling off. The weighing was done with a chemist's balance which turned with the tenth part of a grain.

My first trial was with the great black water-beetle, known as *Dytiscus*, often found in pools, troughs and mill-dams. I put a four-ounce bag of shot on his back, and he walked off with ease. I continued to add weights until he flatly refused to carry more, and I found at last that he could walk slowly under a load of twelve ounces. I then weighed the beetle himself and found that he turned the beam a seventeen grains.

This proves that our water-beetle can carry on his back three hundred and nine times his own weight.

Now let us compare this performance with that of other members of the animal kingdom. If a boy weighing ninety pounds possessed the water-beetle's ratio of strength to weight, he could walk with a weight of thirteen and a half tons on his shoulders! If a mule weighing eight hundred pounds could carry three hundred times his own weight, his load would amount to a hundred and twenty tons. But in fact the mule could barely stagger under a burden of eight hundred pounds. Hence our water-bug, in proportion to its weight, is three hundred times as strong as an average mule.

I next experimented on the large yellow beetle known as the "gold-bug." My specimen weighed eight and a half grains, and was fully able to sustain a load of ten ounces, or about five hundred and twenty times his own weight.

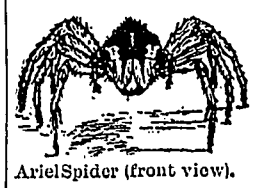
The brown "pinching-bug," as he is called, almost ran away with the ten ounces of shot piled on his back, though he is lighter than the gold-bug, and finally carried more than six hundred times his own weight.

At this rate an ox weighing one thousand pounds would bear a burden of three hundred tons, equal to the weight of water contained in a swimming-tank eighty feet long, twenty-four feet wide and five feet deep.

Not yet convinced that I had found the stoutest insect, I went on testing the powers of various species. But I soon satisfied myself that nothing was to be gained by leaving the beetles, as they far surpassed ants, hornets, crickets and locusts in strength.

At last I observed a medium-sized beetle which seemed to burrow in the earth with wonderful strength. After finding his weight to be four and two-tenths grains, I piled my little bags of shot on his sturdy back until the limit of his power to move them was reached. His load was then a trifle over eight and a quarter ounces—

Ariel Spider (side view).



Ariel Spider (front view).

Ariel Spider (natural size).

exactly eight hundred and fifty-eight times his own weight.

At this rate an elephant weighing three tons could carry a load of more than twenty-five hundred tons—the weight of a ball of solid gold more than twenty feet in diameter, and worth more than twelve hundred million dollars!

So far as my experiments have gone, this brown beetle is entitled to rank as the champion lifter of the world, until another can be found to surpass him. He is known to naturalists as the *Euphoriainda*, but I prefer to call him the Samson beetle.

I next turned my attention to the question, Where may we find the world's swiftest runner? Is it the greyhound, the Western jack-rabbit, or the coyote? No; all these are left behind by the Arabian steed and the English or Kentucky race-horse, with his record of a mile in a minute and a half. But even he is a slow creeper in comparison with the racers of the insect world.

To test this matter it was necessary to measure carefully the length of each contestant, and then to time his speed over a convenient level surface. Of course my racers all ran against time, for I could not train them to start side by side at the word "Go." Much time and patience were required, because each insect had to be tried several times in order to insure correct results.

After many and careful experiments I came to the conclusion that the champion runner is a spider. Spiders, though closely related to the true insects, are not properly classed with them. True insects have eight legs instead of six, and spiders differ in other respects from the construction which naturalists hold to be strictly characteristic of insects.

There is a dark gray, brown-striped spider of small size, common everywhere in the long grass, weeds and moss in woods and fields from early spring to late fall. Spiders of this species build no webs, but roam about in search of their prey through the miniature tangled forests of stems and stalks, running with wonderful swiftness and easily overtaking the insects on which they feed. They are the tigers of the insect world.

I captured, with some difficulty, several specimens of their kind, and tried their speed on smooth rocks, logs and fence-rails, with remarkable results. I selected one that measured three-sixteenths of an inch long, and timed his run across my oilcloth-covered desk twenty-three inches wide. He ran this distance in one and a quarter seconds.

He was made to repeat this again and again. These tests showed that he ran nearly a hundred times his own length in a second.

Imagine for a moment that a race-horse seven feet long could move with proportional speed. At that rate he would run seven hundred feet in a second, or nearly eight miles in a minute. The fastest horse can run eight and a half times his own length in a second. Therefore our little spider runs more than eleven times faster than the horse.

Suppose, again, that a railway engine measuring forty feet in length could run a hundred times that space in a second. Its rate would then be over forty-five miles per minute, or twenty-seven hundred miles per hour!

If our spider could be enlarged to the size of such an engine, and could run in like proportion to his present speed, he would get over the road one hundred miles while the engine was running three miles. He could travel from New York to San Francisco in less than three hours.

There may be faster racers than this brown spider, but we may call him champion until another is found more worthy. Let us give him a name suited to his magical speed, and call him the Ariel spider, after a runner that Shakespeare has made famous.

Next I am going to prove that the champion long-distance leapers and standing high jumpers are found in the ranks of our six and eight-legged performers.

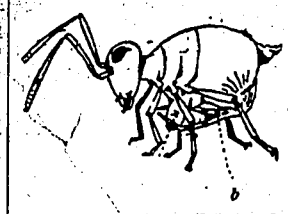
Most of my readers have seen the feats of grasshoppers and crickets. Some have also noticed in grass and on bushes the small, sharp-headed green and brown hoppers very abundant in late summer. These are all high and far leapers.

When they reach the final stage of their growth they, like the true grasshoppers, get wings which help them through the air. It would be unfair to allow those to compete whose wings had appeared; so I made my experiments with specimens that were still in the larva stage. After trying the leaping powers of many grasshoppers, I found one just three-quarters of an inch long that made a leap of forty inches. A katydid without wings did a little better.

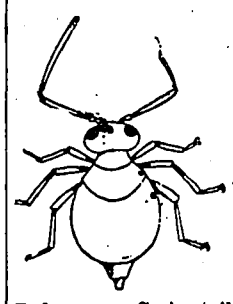
If a toad three inches long could do as well in proportion, he could hop a distance of thirteen feet. The kangaroo is the leader in this line among quadrupeds; but fancy our amazement to see a kangaroo three feet long leap a hundred and fifty-six feet!

Among the little green-hoppers referred to above I found one, about one-eighth of an inch long, which leaped one hundred and forty-eight times his length. I started him from a leaf, and he sprang to a grass-stalk eighteen and a half inches distant.

If the flea were a long-distance leaper, his wonderful hind legs would enable him to leave the grasshoppers and even the green-hoppers far behind.



Podura, or Spring-tail (lateral view). *a*, Spring-piece, in place for jumping. *b*, Suction tube for adherence to smooth surfaces.



Podura, or Spring-tail (dorsal view).

Podura, or Spring-tail. Spring-piece extended behind after jumping.

Fleas often leap over a horizontal distance of more than a hundred times their length; but their jump is always much higher than it is broad. They often spring upward to a great height, and come down almost at the spot from which they started.

I found it impossible to measure accurately the height of the flea's jump, but it far exceeds three hundred times the length of the insect.

If a boy four feet tall, who could jump like a flea, were standing at the foot of the famous Eiffel Tower and wanted to trade knives with a boy on the top, he would not need to ride up on the elevator.

A man of six feet with proportional powers could in nine leaps reach the summit of our highest Alleghany mountains, supposing the inclination to measure three miles from base to peak. Returning, he could make the distance in three outward and downward leaps.

Perhaps the most interesting thought in this connection relates to the safety of alighting after such a descent. Some of my young friends have read about Darius Green and his flying machine:

"Wal, I like flyin' well enough,"
He said; "but they ain't such a 'mazin' sight
Of fun in it when ye come to light!"

A man leaping downward a distance of three thousand feet would gain the speed of a cannon ball and be dashed to pieces. The flea, falling not more than eight feet, comes down as lightly as a snowflake.

Thus natural laws protect the humblest forms of life, and render easy the remarkable feats which we continually observe.

Granting, then, that the flea is the champion high jumper, let us look again for a long-distance leaper that can surpass the green-hoppers.

I happened to recall to mind a curious family of insects—the *Poduridæ*, or spring-tails—possessed of a sort of seventh leg or spring-piece, which is so placed under the body as to give the creature a powerful aid in leaping. I tried various members of this family, and at last found a tiny fellow hardly one-fiftieth of an inch long, which made a clear leap of five hundred and twenty times his length.

Of course he had a great advantage in the possession of his spring-piece in performing this amazing feat.

But if the toad and the kangaroo could do as well as the spring-tail in proportion to his size, the toad could hop a distance of a hundred and thirty feet, and the kangaroo more than a quarter of a mile!—*S. Frank Aaron, in Youth's Companion.*

A NEEDED REFORM.

Several of the large railway systems of the country have inaugurated a temperance reform, insisting that all train employees shall be abstainers from drink, and a number of men have been discharged recently on their refusal to be total abstainers. The authorities argue that even if a man is sober during his hours of duty, if he overdrinks one day, he cannot as safely perform his duty the next, in a position where human life depends upon a clear head and a steady hand.

Discipline in the army has been defined as "that which makes it more dangerous for the soldier to go back than to go on." It is that sort of discipline which must be applied to the present political parties in England and America, that they may stand by such temperance legislation as we have secured and go on to give us that which shall be better still.