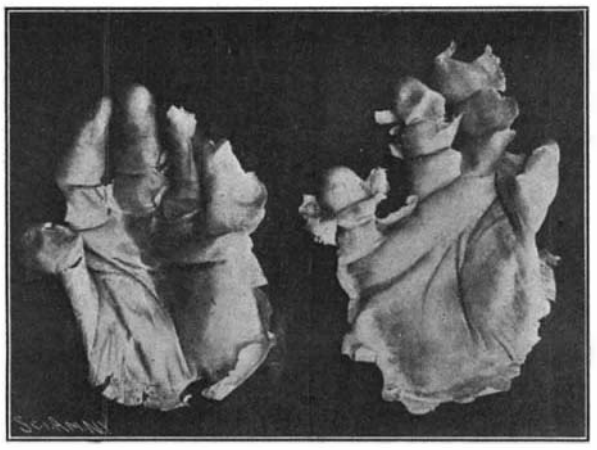
A CURIOUS CASE OF SKIN-SHEDDING.

A resident of Clark County, Missouri, Mr. S. O. Buskirk, has shed his skin annually since his birth, which occurred in 1850. He is well-built, robust and agile, and was never ill. He takes very little medicine for the annual attacks when his epidermis is shed. Physicians have tried to prevent this exfoliation, but they have been unsuccessful, and Mr. Buskirk, notwithstanding the fact that the operation is disagreeable and debilitating, has decided that he will not make any more attempts to prevent it by medical means. The operation requires several days, and for the last five years has begun exactly on June 27. Prior to that time it came either in July or August. About a month is consumed in discarding the old cuticle and the appearance of the new. During this time the finger and toe nails become loose and are discarded, new nails come in, and more time is required in growing the nails to maturity than is ordinarily needed. After the old skin has been shed he says that he feels like a boy of eighteen. The discarded cuticle looks like thin, white rubber gloves.

Our photographs show the remarkable peeling of the hands. The peeling begins at the root of the fingers and gradually spreads in all directions. The hardened skin begins to break away from the new skin which is forming underneath, and if it is tapped with a lead pencil it gives off a sharp sound like that caused by striking a piece of celluloid or stiff leather. By opening and closing the hands often the skin parts along the edge, and then by helping along the process with a penknife, the piece comes off whole. He has several interesting souvenirs in the form of patches of skin which he has shed from his hands and feet at various times, and in every instance they present perfect outlines of the members from which they come.

The thick, callous-like skin from the hands retains its lines, and this remarkable case tends to disprove the entire theory of palmistry, being evidence that the lines of the hands change with time and are not unalterably preserved, as has been supposed. A piece of the skin taken from his right hand when he was ten years old shows that the general conformation of the lines correspond with those of his hand to-day. Still, the new lines are longer now than then, making allowance for the growth of the member as a whole. Fully a third has been attached to the length of the famous "life" line. Evidently nature had decided to increase Mr. Buskirk's span of life. This is not altogether surprising, as his father is now one hundred and three and his grandfather died at the age of one hundred and ten years.



A CURIOUS CASE OF SKIN-SHEDDING.

THE MARSH MOTOR CYCLE.

BY ALONZO R. MARSH.

The Marsh motor cycle, of which the accompanying photograph (Fig. 1) is a good illustration, weighs, when ready for the road, 60 pounds.

The motor, shown in the engravings Figs. 2 and 3, is of the four-cycle jacketless type, using gasoline as fuel. It weighs 20 pounds, is 14 inches high by 4 inches wide. The crank case is 7 inches in diameter. The cylinder is 1⅞ inches in diameter and 2¼-inch stroke. The outside or circumferential part of the crank case or base is an aluminium casting, carefully machined to receive the cylinder and the side disks. The latter are made of steel and contain the bearings. This base is fitted with a filler conveniently located on the front side above the center, through which the lubricating oil is admitted. It also has a drip in the bottom, through which this oil may be charged.

By looking at Fig. 2, which is a side view of the motor, it will be seen that the cylinder, which is made of cast-iron with the usual corrugations, is fastened to the base with six screws.

At the extreme left is the ignition plug, which screws into the combustion chamber. The fixture, which may be seen directly under the plug, is a lug by which the upper part of the motor is fastened to the seat post, and through which the exhaust passes on its way from the cylinder to the muffler. Directly on top of the combustion chamber may be seen the casing of the induction valve, which is nickel-plated, while directly under the combustion chamber may be seen the exhaust valve-stem and the spring which closes the same. The fixture on top of the cylinder is the compression relief-valve.

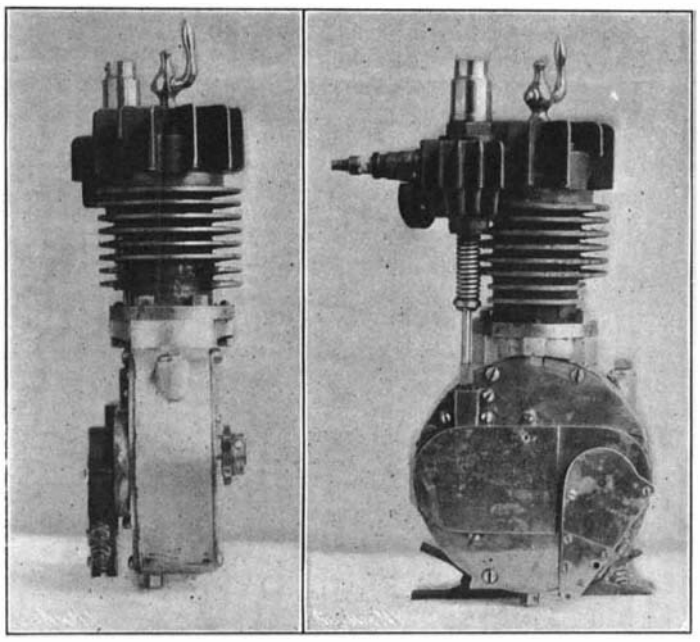
On the left-hand side of the motor are located the gear and cam for operating the exhaust-valve and also the ignition device. These are inclosed in an oil-tight case. On the left-hand side is the sprocket which drives the rear wheel. In Fig. 2 may be seen, on the left of the crank case, a flat projection. This corresponds to a lug on the seat post tube, and is tapped to receive four 4-inch screws, which is a part of the fastening that holds the motor in place. The great feature of this motor is the construction of its bearings, which are so arranged that it has a large amount of bearing surface and still is less than 4 inches wide over all, which permits of its being placed between the cranks of any ordinary road wheel.

By examining the photograph marked 1, the position of the motor is clearly seen, it being located in the angle of the frame in front of the seat post and just above the hanger sprocket. The motor resumes the same angle as the seat post tube, and is fastened to it at the back of the base and also at the back of the cylinder.

The pedal side of the rear hub is fitted with a coaster brake, the motor side being fitted with a 32-tooth sprocket, 1-inch pitch, and ⅜-inch wide. The sprocket on the motor has five teeth, which allow the same to revolve 6⅖ times to one turn of the rear wheel. As the rear wheel is 28 inches in diameter, the motor runs a little over 2,300 revolutions per minute when the cycle is making 30 miles an hour.

The valves and ignition device of this motor are correctly proportioned and carefully made, and with the chain removed from the motor, it will reach a speed of 5,000 revolutions a minute without missing an explosion. The motor chain may be adjusted by moving the rear wheel back and forth in the jaws in which it hangs, while the pedal chain is adjusted by turning the eccentric around in the bottom bracket.

The cylindrical box to be seen in the forward part of the frame is the spark coil, while the tube on the top of the frame, just forward of the saddle, contains four cells of dry battery, which are only 1 1/16 inches in diameter by 1⅞ inches long, and weighs complete, case and all, 1¼ pounds. A coil and a set of these batteries will last nearly 500 miles, which is an item that deserves some notice, as it saves carrying the bulky batteries ordinarily used, which weigh from 12 to 15 pounds.



Figs. 2 and 3.—DETAILS OF ENGINE.

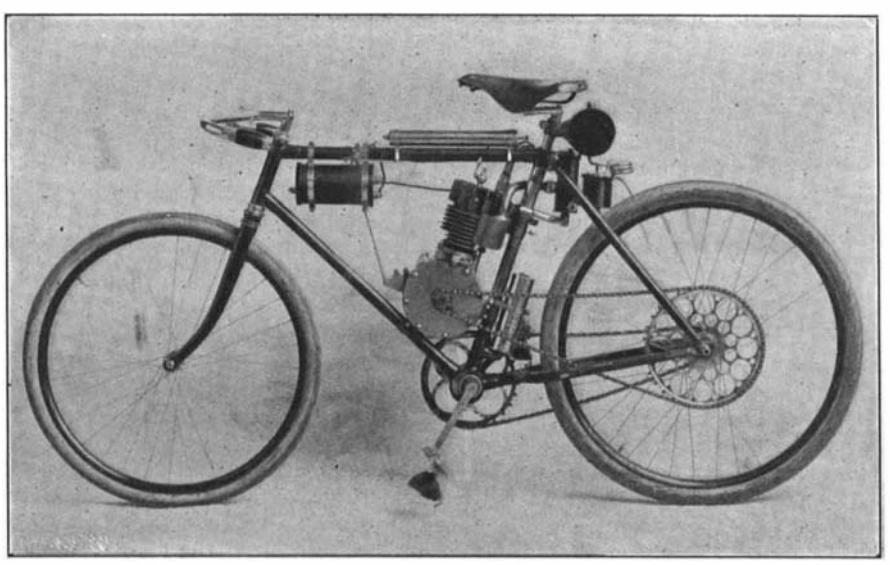


Fig. 1.—MOTOR BICYCLE.

On the rear of the saddle post may be seen the fuel tank, which holds a quart—the amount of fuel that we have found necessary to run nearly 100 miles. The fixture to be seen on the right-hand side below the fuel tank is the carburator, which is of the vaporizing type and is automatic in its operation. It can always be depended upon to give the right mixture of gas and air, and as much as the engine can use at all times. It is securely fastened to the seat mast by a suitable lug.

The fixture to be seen on the left-hand side of the cylinder is an air-scoop, which sends warm air to the carburator. At the rear of the seat mast, between the base of the motor and the rear wheel, may be seen the muffler, which is made from brass tubing, 2 inches in diameter and 7 inches long, and is lined with asbestos, being perforated with a number of small holes on either side. The muffler is very efficient, muffling the exhaust so that it can scarcely be heard. It will be noticed that the makers have used the seat post tube to convey the exhaust from the cylinder to the muffler, the exhaust passing into the tube from the cylinder through the fitting by which the upper part of the motor is connected to the frame. This saves the use of a separate exhaust pipe, which would be in the way, and help to make the machine appear complicated.

On the top tube, just above the spark coil, are located the handles by which the machine is operated, two in number, one on either side. The handle on the right-hand side is connected to the ignition timing device, as may be seen by a steel rod which seems to leave the bottom of the spark coil in Fig. 1. By raising and lowering this handle the ignition may be varied to take place at any point from the beginning to ¾ stroke, and with the gas full on, this will vary the speed from the fastest clip down to 3 or 4 miles an hour. The handle on the left side operates a valve in the gas pipe between the carburetter and the motor, and with this the speed may be varied to either extreme, or the motor entirely shut off.

The grip on the right-hand side of the handle bar operates a switch, by which the motor can be instantly shut off, by simply turning 1/16 of an inch.

To start the machine, first place the handles, gas and ignition in mid-position, then mount the same as the ordinary bicycle. Upon regaining the balance, turn the switch grip, the motor then takes hold, and feet may be allowed to come to rest at the position which best suits the rider. The speed may then be regulated by means of the gas and ignition-handle as best suits the operator.

This motor cycle is the result of considerable hard work, the experimenting covering a long period. First, the motor was hung over the front wheel and fastened to the fork sides, and was found to be very impracticable. The extra weight being placed so high, and as it had to be turned every time with the handle bar, it made the machine very hard to steer, especially going slow in a bad place, or among teams in a crowded street.

Next the motor was tried behind the rear wheel on a line with the hub, but it was found impossible to fasten it securely without adding almost as much tubing as was necessary in the main frame, which, besides the extra expense, makes the machine very ungainly in appearance. At this point a machine was examined that had the motor placed in the space occupied by the crank hanger of ordinary cycles, and without pedals. This machine, when once started, and when running between 10 and 30 miles an hour, worked to perfection, its only drawback being to get it started, even on the level, as you had to make a run with it and then mount, and at the same time be starting the motor. If the motor missed either of the first two or three explosions it would stop, and the operation would have to be repeated sometimes six or eight times before the machine could be gotten under way, it being almost impossible to start up hill. After having had the aforementioned experience, and having studied the matter thoroughly, it was seen conclusively that the only way to place the motor from any practical point of view was in the angle of the frame just over the crank hanger, in which it would have a solid foundation comparatively low down and high under the rider. The trouble was then to make the motor narrow enough to go in this space without sacrificing its wearing surface. The designer finally succeeded in making a motor that, taking the initial pressure of the explosion

to be as high as 600 pounds, has bearings of the same proportions as the best marine practice in steam engines, and to be of the aforementioned width. After having run this motor over 1,000 miles it was taken apart and carefully examined. Not the slightest sign of wear could be noticed, and it is believed that this motor will last from eight to ten years, with ordinary use and reasonable care. This machine will carry any rider of average weight from 3 to 30 miles an hour and up any ordinary hills, without the use of the feet.

NEW FORM OF ELECTRIC AUTOMOBILE.

This automobile was constructed by Mr. D. L. Davis, superintendent of the Salem Electric Light Company, of Salem, O., who has been engaged in work upon it for the past thirteen months. Its trial trip has been made, and we are told it proved most satisfactory in its workings. In the construction some new ideas have been carried out that are departures from those adopted by the American manufacturers of horseless vehicles. This new auto has a wheel base of 54 inches, and, owing to its different construction from other vehicles, its body is small and lower than customary, and the batteries of 40 cells are below the axle line, thus doing away with the clumsy and top-heavy appearance of many horseless vehicles. The wheels are of steel, with heavy rubber tires inflated. Two springs only are used, one on either side of the body and directly beneath the passengers. This feature proves a success, as the carriage is easy riding. In the application of power is where the auto differs radically from American machines generally. The power is supplied by two one-horse electric motors, which are connected with the front wheels, working independently of each other. The vehicle is also steered by the front wheels, which swing on pins close to the inside of the wheels, carrying the motors back and forth with them, the connection being made with brass contact plates which allow for the swing of the wheels. The frame work is of tubing, which is carried from the body up to the top of front axle, and through this tubing is carried the wiring from the batteries to the motors. The brake is stationary, the wheels being drawn up to the shoe when brake is applied. The reversing lever also applies the brake. The general appearance of the vehicle is handsome, owing to its compact construction. Its weight is about 1,400 pounds.

NEW FORM OF ELECTRIC AUTOMOBILE.

THE MOST POWERFUL LOCOMOTIVE EVER BUILT.

Judging from the accompanying illustration of the latest locomotive to hold the record for size, weight, and power, there is at present no evidence that we have reached the limit of possibilities in these gigantic engines. One would have thought that with a limitation of gage of 4 feet 8½ inches, and of height of 15 to 16 feet, the extreme size had been reached in such engines as were built by the Baldwin Company for the Lehigh Valley road, or by the Brooks Company for the Illinois Central Railroad. Yet a comparison of the principal dimensions of these two engines, and of the big locomotive constructed for the Union Railroad shortly afterwards, with the engine now under discussion, shows that the growth in size and power of the biggest freight locomotives still proceeds apace, as may be judged from the accompanying table.

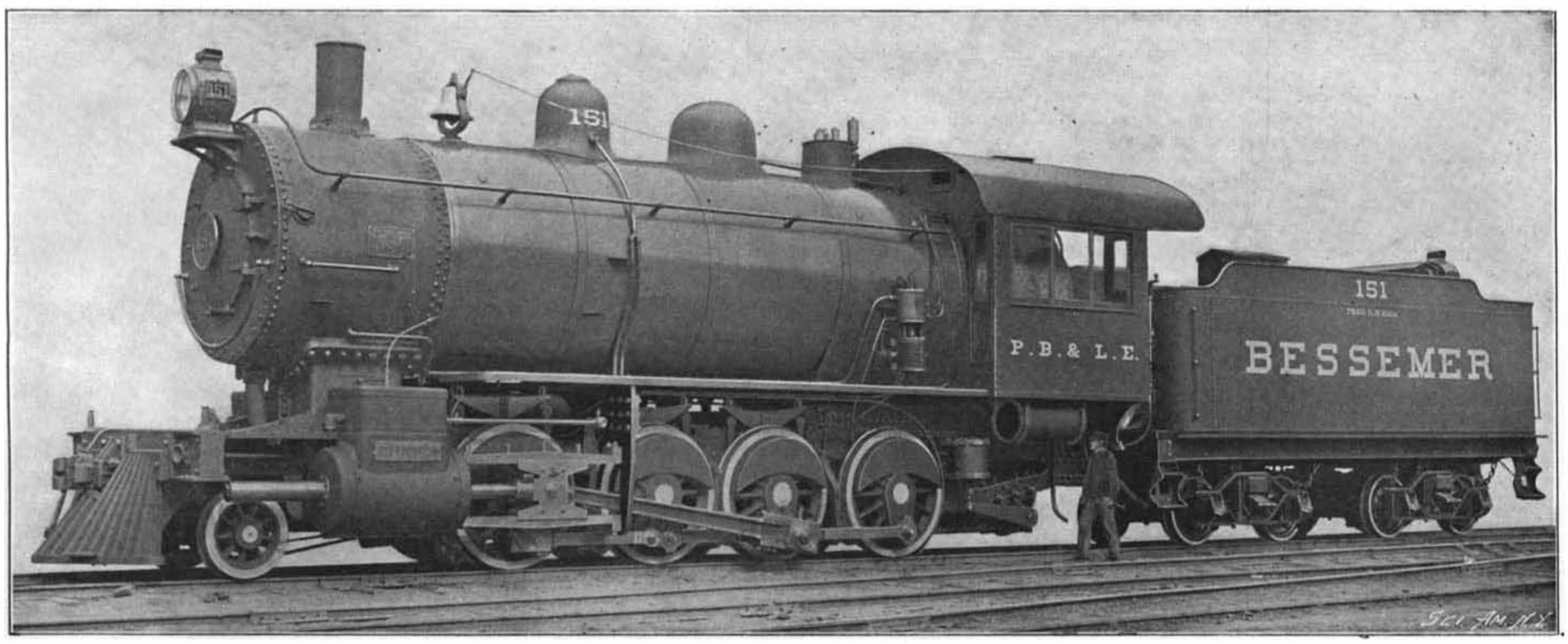
COMPARISON OF RECENT POWERFUL LOCOMOTIVES.

Railroad.....	P. B. & L. E.	Union Railroad	Illinois Central	Lehigh Valley
Builders.....	Pittsburg	Pittsburg	Brooks	Baldwin
Size of cylinders...	24 x 32 in.	23 x 32 in.	23 x 30 in.	18 and 30 x 30 in.
Total weight.....	250,300 lb.	230,000 lb.	232,200 lb.	225,082 lb.
Weight on drivers..	225,200 lb.	208,000 lb.	195,200 lb.	202,232 lb.
Total weight of engine and tender	391,400 lb.	334,000 lb.	364,900 lb.	346,000 lb.
Tractive power based on 25 per cent of adhesive weight.....	56,300 lb.	52,000 lb.	48,800 lb.	50,558 lb.
Net hauling capacity on level at 10 miles per hour	7,847 tons	7,261 tons	6,717 tons	7,049 tons
Ratio of tractive power to adhesive weight.....	4	4	4	4
Percentage of efficiency	100	92 5	85·6	89·8

Engine No. 150, which is herewith illustrated, was the first of the large engines of this class to be finished, and it is, by a considerable margin, the largest and most powerful locomotive yet built. These engines will be used in hauling exceptionally long, heavy trains of ore and iron at moderate speeds. The net hauling capacity on a level and nearly straight track is 7,847 tons, which is equal to the capacity and speed of a fairly large freight steamer of the present day. When the engine is working up to its full power, the drawbar pull is 56,300 pounds, or a little over two tons greater than that of the big Union Railroad locomotive which comes next to it in power.

The total weight of the engine alone is 125 tons, and of the tender 70 tons, the total weight of the engine and tender being thus only 5 tons short of 200, or fully equal to the weight of an average passenger train. The boiler is of exceptional size, measuring 88 inches in diameter at the throat-sheet. There are four hundred and six 2¼-inch tubes in the boiler, each measuring 15 feet over the sheets, and the total heating surface in the tubes is 3.564 square feet. The heating surface in the firebox is 241 square feet and the grate area 26·8 square feet. The total heating surface is 3,805 square feet. The driving journals, on the front intermediate, and back axles measure 9 by 13 inches, while the main driving journals measure no less than 10 by 13 inches; the main crank pin, moreover, is 7½ inches in diameter by 8 inches in length. The cylinders are 24 inches in diameter by 32 inches in length, and in themselves are as big as many a small stationary boiler; while the piston rods have a diameter of 4⅛ inches. The tender has a tank capacity of 7,500 gallons and carries 14 tons of coal. Big as this engine is, we suppose it will only be a matter of a few months before its dimensions are surpassed. Just in what direction the increase can take place it is difficult to say, as the width over the cylinders and the height of the smokestack must have about reached the limit of the loading gage. Any considerable increase in size must necessarily take place in a longitudinal direction.

BREAKAGE of propeller shafts at sea costs an immense sum annually in salvage. Mr. Justice Barnes, of the British Admiralty Court, said recently that during the past two years the amount awarded by that court for salvage of steamers thus crippled was £135,406, while the total awarded in other cases of salvage amounted to only £95,630.



THE LARGEST LOCOMOTIVE IN THE WORLD—RECENTLY BUILT FOR THE PITTSBURG, BESSEMER, AND LAKE ERIE RAILROAD.

Cylinders. 24 × 32 inches: drivers, 54 inches diameter; steam pressure, 220 pounds; diameter of boiler, 88 inches; total heating surface, 3,805 square feet; weight of engine, 125 tons; weight of tender, 70 tons; tractive power, 28 tons; net hauling capacity on the level at 10 miles per hour, 7,847 tons.