

The Masterpiece of American Stage Mechanism and How it is Worked
In "Ben-Hur."

The accompanying cut was taken by flash-light during a recent performance of Klaw & Erlanger's stupendous and costly production of Gen. Lew Wallace's religious drama and spectacle, "Ben Hur." It is the most convincing bit of realism ever presented on the American stage. The difficulty of practically developing this wonderful feature was one of the reasons which caused

Gen. Wallace to decline for years to permit his book to be dramatized. After Klaw & Erlanger had submitted to him a complete working model of the mechanism of this scene, and had demonstrated to him its thorough practicability, he began to consider the dramatization of his novel. He saw what a marvelous achievement a real chariot race on the stage would be, and

that it could be accomplished with the apparatus Klaw & Erlanger had invented and constructed. Then he became very enthusiastic over it. This and other difficult problems having been successfully solved, he consented to the translation of his story into a drama.

The chariot race occurs in the fifth act of the play. It is preceded by a scene showing the exterior of the circus in Antioch. Here the great wager is laid between Santallat, the secret agent of Simonides, (the steward of Ben-Hur), and the Roman contestants Messura. The signal for the race is sounded and the crowds rush into the arena. The stage is suddenly darkened. A fanfare of trumpets is heard and the din of the shouting of a riotous multitude. The lights are on. Over

the sound through clouds of dust, with a course as of muffled thunder. The chariots of Ben-Hur and Messala, each with a driver, are seen in the distance, fitting the description in the story. They are racing at a tremendous speed in their desperate effort for supremacy. The walls of the arena, the stalls and the galleries, crowded with spectators, are visible all round the track. The four blooded bays of the Shikar of Ilderim, driven by Ben-Hur, dashed by the white and black horses of Messala, plunges headlong under the fear of his fiery and excited steeds, while Ben-Hur sits calmly and firmly in his seat.

The next scene shows the vast curve of the amphitheater, stretching away in perspective. Ben-Hur in his chariot is before the consul's seat, and Messala is behind him, and receiving the plaudits of the people.

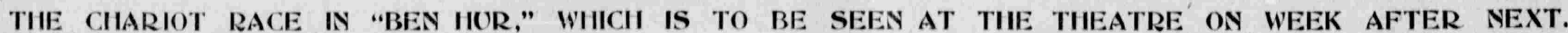
It cost Klaw & Erlanger over \$20,000 to develop this magnificent incident in the play. The eight horses alone cost them \$7,000. The mechanism of this

scene was invented by Claude Hagan. The horses are made to gallop at break-neck speed and strain every muscle to gain the advantage in the race. The wheels of the chariots revolve as rapidly as they would in any fierce-draw race; they are made to lurch and sway while the flaming be-ribboned garments of the drivers flutter behind, adding intensity to the realism of the scene. The illusion is still further increased by the use of the most authentic and effective of the dust which rises in blinding clouds beneath the feet of the horses and the wheels of the chariots. The clatter of the horses' hoofs, and the rumble of the chariots are distinctly heard.

To bring out all the effects, the entire stage of the theater is cut away and a sub-stage, eight feet deep, is built with traps. Two great cradles, 20 feet in length and 14 feet in width, and which are movable back and forth on rail-ways, and supported by a bridge structure, capable of holding 20 tons, are inserted in the cut-up stage. The tops of the cradles are two inches above the

level of the theater stage. Each cradle bears four horses and the chariot of each contestant. On each cradle there are four runways or treadmills of hickory slats, two of them wide and covered with a rubber mat, and two narrow and two and a half feet wide. On each of these treadmills a horse is secured by steel cable traces, which hold him in place and prevents him from moving forward or backward. By means of a pulley and gallop, the treadmill revolves under his feet, thereby eliminating the forward pressure created by the impact of his hoofs, which would force him ahead on the rubber mat. By means of a mechanical arrangement it is possible to make the horses actually to gallop with all their speed within a space of their own length, and at the same time be regulated so that no one will be in the lead at the finish.

This scene has been acknowledged by the ablest critics as the greatest novelty in stage mechanism this country has ever witnessed. It is a very costly scene, for, aside from the outlay made

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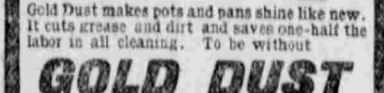
Mementoes of Jeff Davis and Generals
Draw Together Veterans of
Blue and Gray.

Special Correspondence.

Richmond, Va., Oct. 12.—Of the many historic features of this old southern city none is more interesting than the Confederate museum, once the White House of the Confederate States of America. To the northerner scarcely less than to the men and women who knew it as the seat of a government to which they gave the best years of their lives the relics which it enshrines are inspirations to stirring memories. Here soldiers of the blue and those who wore the gray meet in amity to talk of the strenuous days of their youth, and many an acquaintance began from opposite sides of the firing line has been cemented into friendship under the roof which once sheltered Jefferson Davis and his cabinet.

If the museum guide should ever write his memoirs they would contain choice bits of unwritten history gleaned from visiting veterans. A northerner who was here recently told the guide that he had

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The great importance of completing the magnetic survey of the globe was urged by Capt. E. W. Creak in his address to the annual conference of the British Association. When Gilbert in 1600, discovered the earth to be a great magnet, he supposed it to be a stable one, and it was not until 34 years later that the ever-varying magnetic declination near London, proved the contrary. Observations of the changes are still lacking for a great portion of the globe away from the coasts, while still less has been done on the two-thirds covered by water. Just at present the observations and expenditures in the Antarctic

aid much in the work of shedding light on it.

The great earthquakes are traced by a committee of the British Association to eight districts, of which seven are bounded by ocean. Five, fringed by the shores of the Pacific, one is in the Indian ocean, one in the West Indies and the eighth is in the Caucasian Himalayan region. Each of these earthquakes covers the entire earth, the broken up strata left are numerous and the shocks. The earthquake movement is propagated around the globe at the uniform rate of about two miles per second, but through the earth the rate increases with the depth to about seven miles per second.

The photosensitive selenium cell of E. R. Rabin has been used to record the progress of eclipses. The cell provides sensitive to the heat rays even in a dense fog.

The great ocean of air in which we live is never at rest, some of its movements—like the trade winds—being regular and constant. From observations during 20 years of the sun's position as recorded in a British Association

52 years of coffee experience
and the reputation of our house—a reputation earned by

paper, has been able to calculate the average of the movements for different parts of the globe, not only at the surface, but at the greatest heights. One of his most important conclusions is that the hitherto assumed vertical circulation between the poles and the tropics has no existence. He finds that above the thermic equator and the equatorial calms a current from the

east persists throughout the year. Above the trades an anti-trade prevails, blowing from the north in the north and from the northwest in the south; this anti-trade does not pass the polar limit of the trade, but deviates more and more to the right in the north and to the left in the south, the southern so as to become a current from the west over the crest of the barometric maximum of the tropics. Here it tends to increase the trade. The winds at the equator and the trade join sometimes that of the trade, sometimes that of the equatorial calms, according to the season. The trade winds are distinguished by gradualness in their direction, and by the layers of air in the temperate zones flow over the high pressures of the tropics and descend there. The irregularities at the equator and the subtropics in the regions of the Asiatic monsoons, disappear at the altitude of the lower or intermediate clouds.

Troublesome pests of the lawn are the common dandelion (*taraxacum officinale*) and the fall dandelion (*leontodon autumnale*.) Owners of lawns and parks permit the spring cutting of dandelions for "greens" but Prof. W. M. Munson of the Maine Agricultural Ex-

periment station, condemns this practice as really very harmful instead of beneficial. Every crown cut off is quickly replaced by one to six new crowns. For keeping out the pests, thick sowing with three to five bushels of carefully cleaned grass seed per acre is recommended, with thorough digging out of scattering dandelions, and new seeding or sodding when these plants become numerous.

Olema, the textile of Hawaii, is found to have promising qualities. The plant belongs to the nettle family, it resembles oleum without the troublesome resin of the latter, and it flourishes in tropical forests at a height of 2,000 feet. The fiber proves to be extraordinarily fine, light, strong and durable. A rope of ordinary size appears as soft as silk and has the strength of a ship's hawser and strands no heavier than twine are as strong as wire. Nets and fish lines resist the action of salt water, having been used for scores of years without loss of strength. Garments from the fiber have the delicate texture of silk, are practically indestructible, and may last a lifetime.

Experiments with different methods of jacketing boilers have shown the Paris, Lyons and Mediterranean railway that painting increases the loss of heat. In calm air a single packet of mineral wool radiated about one-half as much heat as a bare jacket, and one-third as much as a painted one, while a double layer of mineral wool reduced the loss to about one-half those with a single layer. Strong air currents doubled the losses from radiation.

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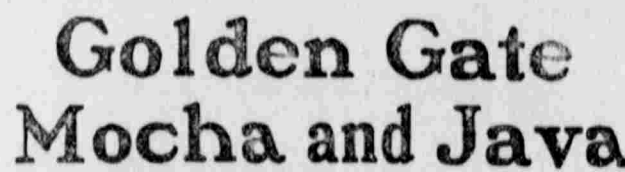


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