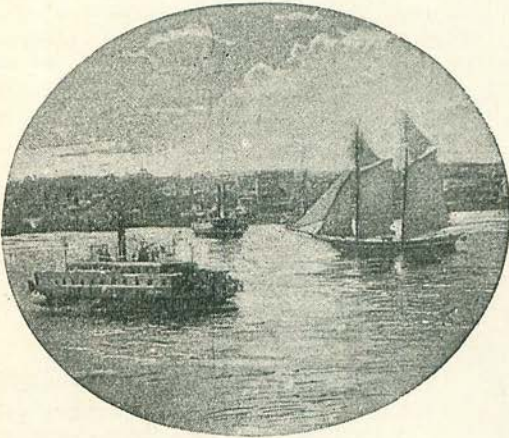


Instantaneous Photographs.

BY ARTHUR MORRISON.



THE FIRST INSTANTANEOUS PHOTOGRAPH.



WE propose to show in this article some instances of the wonderful things which have of late been done in the direction of quick photography; but with the object of correcting the popular notion that "instantaneous" photography, as it is usual to call it, is entirely a production of the last ten years or so, we reproduce first a view of New York harbour, with vessels in full motion, taken by Mr. Werge, now of Berners-street, so far back as 1854. The original was a daguerreotype—a product of that beautiful process just then giving way before the newly-invented collodionised plate of Scott Archer. The art of the daguerreotypist is now almost lost, Mr. Werge being, with perhaps a single exception, its only living exponent. It was a careful, laborious, but very beautiful process, and, in regard to permanency, absolutely a different thing from the fugitive silver-printing which pleases us to-day. The labour and skill involved are difficult things to be understood by the slap-dash photographic amateur of these times; but as to the beauty and permanence of the results—one has only to inspect the specimens still in the possession of Mr. Werge, with their delicate gradations of tone, just as

they were forty years ago, to acknowledge modern decadence in these respects. The picture here copied was taken with a simple and rather clumsy wooden drop-shutter, of Mr. Werge's own manufacture, used in front of the lens, and none of the elaborate machinery available now.

The fact being understood that instantaneous photographs are not altogether new things, the further fact must be admitted that during the later years of the reign of the dry plates great things have been done in carrying this quick work nearer perfection, and the apparatus and material now available render possible feats startling enough to bring good Monsieur Daguerre from his grave. To photograph a bird actually upon the wing is an achievement to the point of which neither he nor any of his early fellow-labourers upon sunlight brought his work. Nevertheless, we print a reproduction of such a photograph on this very sheet of paper. The picture is the work of Herr Ottomar Anschütz, of Lissa, in Prussia, a gentleman who has carried instantaneous photography to its furthest at present. The stork as he appears leaving his nest is not imposing as a model of winged grace, and exhibits a curious humped and headless appearance which no artist would dare to give him on canvas. This, indeed, is one of the great aims of this quick work; it gives us surprising evidence as to the real



By Ottomar Anschütz.]

STORK LEAVING NEST.

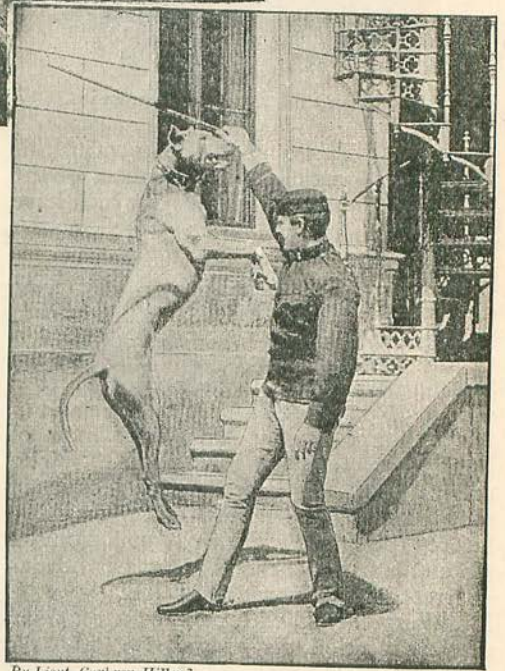


SEAGULLS.

action of animals in motion, which the eye fails to follow. It has been of vast use to M. Marey, the great authority upon animal action, of whom more anon. Meanwhile, attention will not be wasted upon the fine English photograph of a flock of sea-gulls here represented. Considerably more than two hundred birds are to be seen in every imaginable flying attitude, and many swimming.

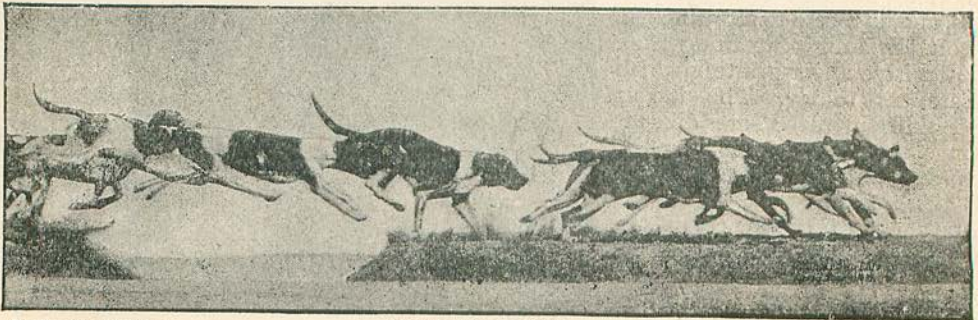
The interesting picture of a pack of hounds, jumping and running, which we print, was taken with a blind shutter operating near the plate by Herr Anschütz. The positions of the animals as they are caught are interesting, and sometimes quaint. Observe the dog who is just landing from his jump. The fore half seems that of a dog standing quite still, and taking a leisurely look ahead; the hind half is

jumping. The second hound behind him seems likely to land at the foot instead of the top of the opposite bank, and no artist would have dared to draw his fore-feet so low in relation to the others, considering that he has only begun his jump. Observe also the little spirts of dust kicked up by the feet of the others.



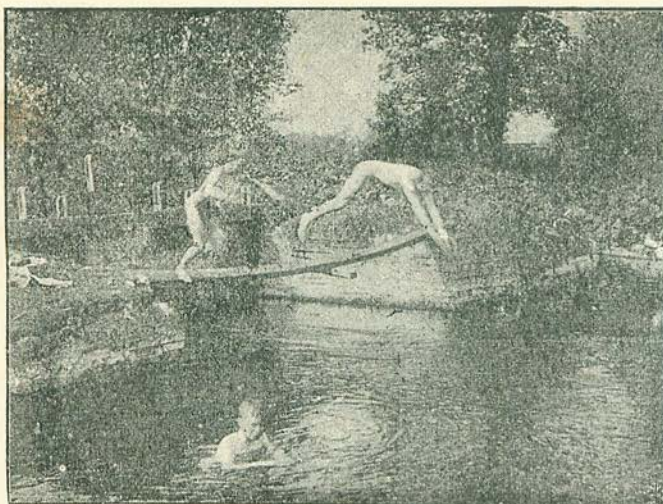
By Lieut. Carl von Hiller.]

DOG JUMPING.



By Ottomar Anschütz.]

HOUNDS ON THE TRAIL.



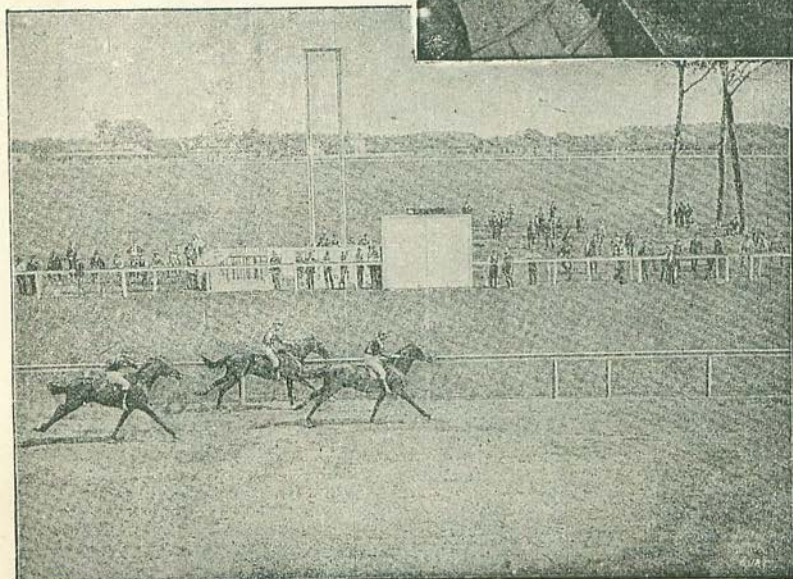
By Parry Williams.] BOYS DIVING.

Another admirable dog picture we reproduce from the album of Lieutenant Carl von Hiller, of the Austrian army. The big dog is perfectly outlined in the middle of his leap.

We reproduce a good amateur-taken picture representing boys diving and swimming. This is by Mr. Parry Williams, well known for this sort of work among old Paulines. Another of our pictures shows Miss Ward, the champion lady diver, in the middle of her



By Messrs. Underwood.]
MISS WARD, CHAMPION
LADY DIVER.



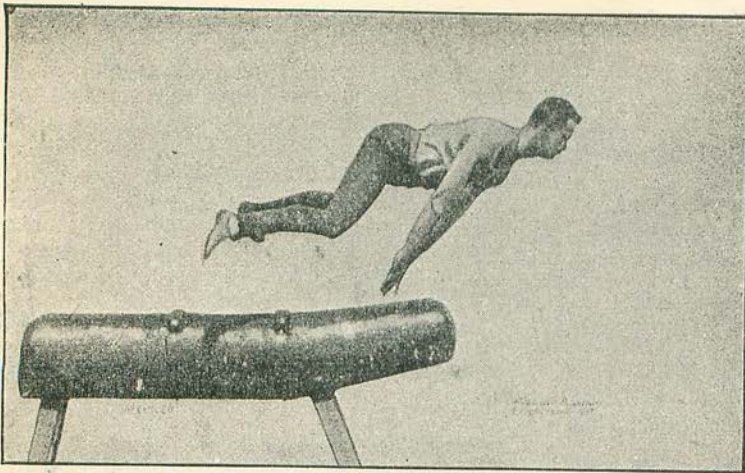
By John C. Hemment.]

FINISH OF A HORSE-RACE.

leap—taken by an American operator.

The photograph of a horse-race finish which we reproduce is the work of Mr. J. C. Hemment, of Brooklyn, New York. This gentleman holds the position of Official Photographer to the Coney Island Jockey Club, and his business is, by his plates, to check the decisions of the judges in cases of very close finishes. The eye is a most treacherous guide in such cases, more

especially when one horse, who may at the actual finish be a fraction behind the other, is traveling the faster at that moment. In such a case, of course the camera, if properly placed and used, is infallible. Nevertheless, it is not easy to understand an excited crowd waiting patiently for



By Ottomar Anschütz.]

CLEARING THE VAULTING-HORSE.

half an hour while the rapid plate is slowly developed and fixed before being told the official decision. Such a thing would cause some commotion, say, in the silver ring at Kempton Park, and that would be a golden half-hour for the welshers and brief-



By Ottomar Anschütz.]

LEAPING FROM SPRINGBOARD.

snatchers. The unconventional attitudes of the flying horses are the striking thing about this picture, as is always the case with snap-photographs of horses. The mare La Tosca is winning with a little

to spare, but is traveling at the rate of $19\frac{1}{2}$ yards a second—very little less than forty miles an hour. The animals' forelegs seem jointless wooden stilts, and out of time with the hind legs altogether. A picture exhibited in the Royal Academy with horses galloping like these would be received with howls of laughter. Nevertheless, although it would not be a true representation of what the artist

saw, it would be true of what the horses did.

The photographs of the gymnast clearing the vaulting-horse, another leaping over his friend, and of the acrobats, one throwing the other a summersault, are selections from a series taken by Herr Anschütz. These series of photographs are the results of the latest development of instantaneous photography, an arrangement



By Ottomar Anschütz.]

ACROBAT TURNING SUMMERSAULT.

being devised by which a number of pictures of a moving object are taken in succession, thus showing the movement gone through in all its details. These arrangements are of different kinds, designed to take ten, twenty, forty, or even more photographs a second of the same object. Perhaps the first to devise an effective apparatus of this kind was Mr. Muybridge, of San Francisco. He employed a number of cameras placed in a line. The path of the running man, galloping horse, or whatever the object was, was crossed by threads, which were broken in succession by the object. Each of these threads actuated the shutter of a camera, and thus Mr. Muybridge secured some really brilliant results, of great value to the anatomist and to the artist. Other motions beside running were in the same way intercepted by threads, and equally good pictures were made. M. Marey, whose name has been already mentioned, saw a number of these pictures in Paris, and was greatly impressed with the value of such productions in such researches in animal motion as he was then conducting. He set to work himself to invent a single instrument which should produce the same results, and shortly brought into practical use his "Gun Camera," working on the principle of the revolving pistol, and fitted with a stock and butt in the manner of an ordinary gun. With this a bird could be covered in its flight, and a very rapid succession of exposures given, each of $\frac{1}{720}$ of

a second in duration. Other machine cameras were invented in this country by Messrs. Greene & Evans and others, and the latest of these instruments are, of course, worked by electricity, an intermittent current crowding a marvellous number of separate exposures into a single second. Odd as many of the moving animals in the pictures thus produced appear to our unaccustomed eyes, it needs but to place them in their proper order in the Zoetrope or a similar instrument, to observe the reproduction of the motions as we see them in the most marvellously natural manner.

Herr Anschütz has carried this branch of instantaneous work to a very high degree

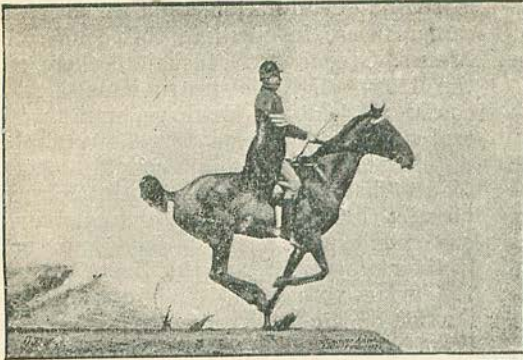


By Ottomar Anschütz.] SOLDIERS MARCHING.



By Ottomar Anschütz.] SOLDIERS MARCHING.

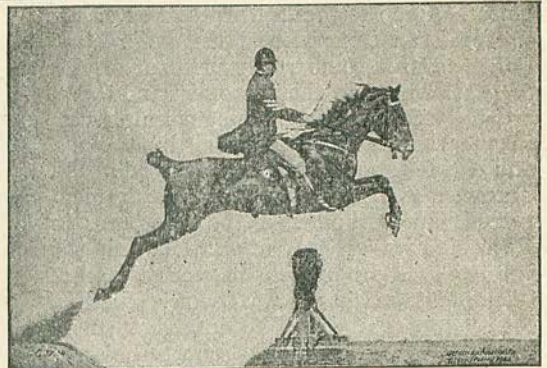
of perfection. He has a very admirable series of photographs of soldiers marching—too long a series to be reproduced here, although we give two, showing very different stages of the step. Of the series which give all the successive motions of a horse and rider taking a jump, we select four concerned in the most interesting part of the feat—the actual leap itself. Perhaps the most striking of these photographs is the first. A close examination will show that the horse is actually standing on one leg, about the last attitude one would imagine a horse to adopt in "taking off" for a jump. The two hind legs, it will be observed, are drawn up together, preparatory to bringing them down against the ground to give impetus to the spring. In



By Ottomar Anschütz.]
HORSE JUMPING—FIRST STAGE.

each of the succeeding pictures the leap is carried out, the coat-tails of the rider gracefully rising by degrees. The last of the pictures, just before landing, is probably the only one looking exactly as a painter would represent it. The little spirts and swirls observable about the ground in the first three are the dust disturbed in the gallop and take-off.

Of course in none of these pictures is the moving object absolutely fixed, in



By Ottomar Anschütz.] THIRD STAGE.

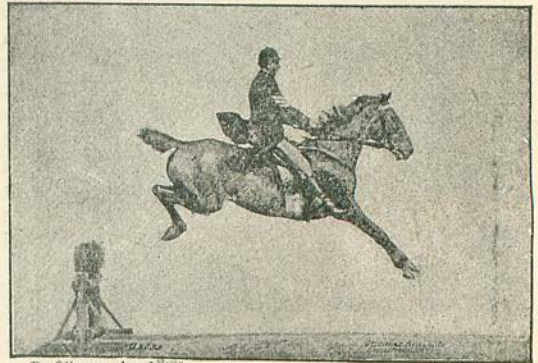


By Ottomar Anschütz.] SECOND STAGE.

the complete and microscopic sense. That would be an impossibility in the case of any continuous motion. In an ordinary slow exposure, should any part of the object move, it is seen with a smeary, misty edge in the resulting picture. Precisely the same thing takes place in every instantaneous picture of a moving thing or things, but the rapidity of the exposure reduces this smeariness to an imperceptible point. Thus if a succession of photographs were taken, say of a trotting horse,

giving exposures of one second, $\frac{1}{2}$ th of a second, $\frac{1}{5}$ th, $\frac{1}{10}$ th, and $\frac{1}{50}$ th in each case, the pictures would differ thus. In the first the whole thing would be an unrecognisable smudge; the next would be very little better. With $\frac{1}{2}$ th of a second the outline of the horse's trunk would be fairly distinct, unless his pace were great, but the legs would be a fog except any one leg which might be planted upon the ground in the middle of the exposure, and that would be indistinct, because

the legs of a smart trotter work very quickly, and his foot is never $\frac{1}{50}$ th of a second upon the ground. With the $\frac{1}{50}$ th the planted leg or legs (legs are not always planted two at a time as the eye tells us) would be fairly sharp, but the others would be blurred, unless the trot were slow or the horse some distance from the camera. The $\frac{1}{10}$ th exposure would be much better—probably a very respectable picture; while the $\frac{1}{5}$ th, of course, all things being favourable, a splendid photograph



By Ottomar Anschütz.] FOURTH STAGE.

should result. Still it must be remembered that the horse moves, even in $\frac{1}{500}$ th of a second, and the fogginess is in the picture,

out for a stroll, and the two orang-outangs, are pictures caught at particularly happy moments. We print also an interesting

picture of a rearing horse by Herr Anschütz. That showing an American cadet executing the awkward feat of vaulting over a galloping horse (page 637) is by an American gentleman.

Apart from these series, Herr Anschütz has achieved a singular feat in instantaneous photography by taking a clear picture of a conical shot projected from a big gun at the rate of 1,312 feet a second.

For this he constructed a small camera of great strength, fitted with a shutter which was pulled downward across the face of the plate by an eight hundred pound weight. This was a roller blind shutter with a slit of $\frac{1}{500}$ of an inch in width. On one side, 200 feet off, a wire



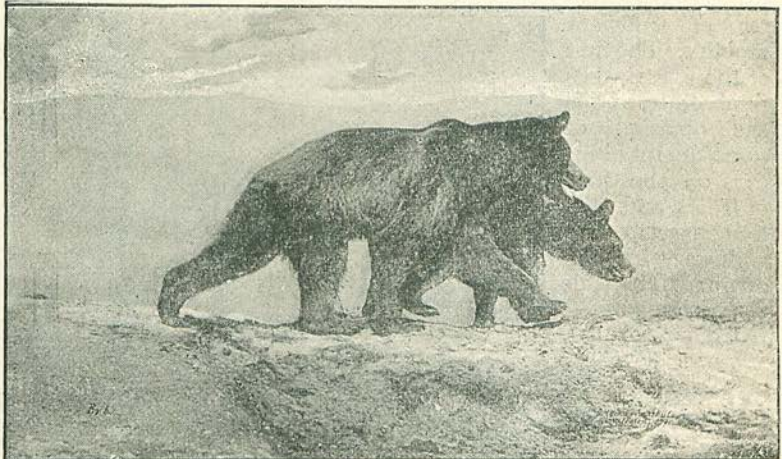
By Ottomar Anschütz.]

KANGAROO JUMPING.

but so reduced as to be imperceptible to the eye. Considerably shorter exposures than this are given for more rapid objects. It is always an easier thing to take a negative from a moving object from the front, because as it approaches its apparent movement is not so great as when it passes broadside on. The broadside-on position of a running horse is one of the most difficult to obtain of all things. Nevertheless it is almost invariably the first thing attempted by the adventurous amateur.

Herr Anschütz has also applied his photography with singular success to the production of pictures of wild animals in natural and unstudied circumstances. We reproduce some of the more striking of his results. The kangaroo just alighting from his leap, the two bears

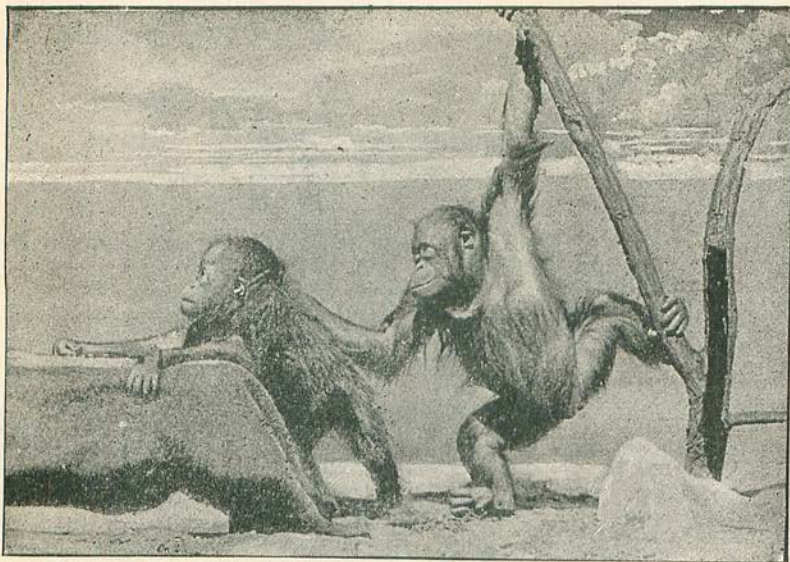
constructed a small camera of great strength, fitted with a shutter which was pulled downward across the face of the plate by an eight hundred pound weight. This was a roller blind shutter with a slit of $\frac{1}{500}$ of an inch in width. On one side, 200 feet off, a wire



By Ottomar Anschütz.]

BEARS WALKING.

netting was placed, and this was electrically connected with the shutter. The gun was fired so that the shot first passed through the wire netting; the immense weight was



By Ottomar Anschütz.]

ORANG-OUTANGS AT PLAY

instantly released, bringing the slit of the shutter across the plate in $\frac{3}{40000}$ of a second, and the picture was taken. On development a perfectly clear image of the flying shot was brought out, exactly similar in all respects to another of a similar shot which had been hung up before the camera for comparison on the photograph.

The great essentials to the production of a good photograph of an object in rapid motion are a sufficient light of the proper chemical quality, an extremely sensitive plate, and a shutter of sufficient rapidity. The first of these essentials is absolute, and is the occasion of some quaint blunders on the part of ladies and gentlemen who are smitten with the superstition already alluded to—that a hand camera is a sort of magic apparatus, and quite a different article from all others. They buy a neat little box with a button, which they believe, when touched, will cause a

picture to be taken of whatever may be before the little box at the time, no matter where, what the light, or how rapidly the picture may be moving. They have seen photographs of the interior of rooms taken with an ordinary camera—probably with from five minutes to half an hour's exposure. Ah, but *this* is an instantaneous camera, they

argue, and, with an airy snap of the shutter, walk off, confident that the professional to whom they usually leave the development and printing—all the real photographic work, in fact—will be able to find somewhere in that mystic little box a picture of all that room and everything and everybody in it. The enthusiastic innocents do not understand that a hand camera is nothing but an ordinary camera without a stand, made more portable and simple—that, in fact, it is only made a hand camera



By Ottomar Anschütz.]

HORSE REARING.



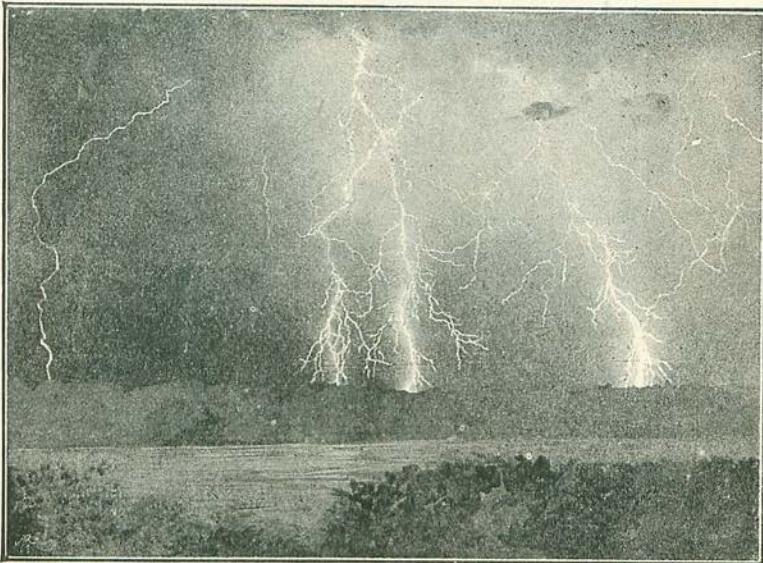
VAULTING OVER HORSE AT THE GALLOP.

in order that it may be carried easily and used at a moment's notice, and when a stand is impracticable; and that, picture for picture, an ordinary camera, fitted with a quick shutter, will, with its various adjustments, produce better instantaneous results.

perfectly still for many seconds together, and must, in such a case, be rested upon some stationary object.

The sensitiveness of the plate is now a matter almost invariably out of the operator's hands, and in that of the plate manufacturer, for at the present time there are few, even among professionals, who coat their own plates, except for very special or experimental purposes. It has, however, to be borne in mind that the joys of instantaneous work are modified by the fact that the more rapid a plate may be to receive the picture, the slower it becomes in development, the more care and skill must be exercised in all the operations, and the greater discomfort and trouble taken in the dark room, with much less than the ordinary light.

The shutter, too, is a matter for the maker. The more ordinary kind of shutter operates in front of the lens, and although admirable pictures are taken with these—they are, in fact, almost the only sort used by amateurs—for specially rapid work, a shutter immediately before the plate in the



By A. H. Binden.]

LIGHTNING.

No man understanding the use of an ordinary camera would undertake a "snap" picture of a group under trees, or in anything but the best light—he would give a proper "time" exposure; and if a picture of this sort is to be taken in a hand camera, it must have a "time" exposure too—wherein is seen a disadvantage of the hand camera, by reason that it cannot be held

interior of the camera is more effective. This usually takes the form of a roller blind with a slit of a particular width, which is drawn quickly over the plate, thus exposing only a small part at once, and again covering that part with extreme speed.

Some of the instantaneous photographs which have created the greatest impression

among the non-photographic public are those of lightning. It is natural to imagine that to secure these pictures, the most rapid of plates and the most perfect of shutters is requisite. As a matter of fact, no shutter is needed at all, and the best plates for the purpose are slow ones. The pictures can only be taken at night, and the process is this. The particular part of the sky in which the flashes are occurring is noted, together with the direction in which the storm appears to be travelling. The camera, brought to the usual focus for distant objects, is then pointed toward that quarter of the sky in which the next flash may be expected to appear. A slow plate is inserted, and the cap is taken from the lens. Upon the slow plate, in the darkness, no impression is made until the flash, immediately after which the cap is replaced, and the plate is ready for development and fixing. Many magnificent photographs of lightning have been taken in this way, and again a blow is dealt at art convention, for never has the picture contained anything like that sharp zig-zag of straight lines pictorially held to represent lightning. A very fine lightning photograph is that which we here produce, taken a few years ago by Mr. A. H. Binden. Here are several distinct great

number of interlacing branches, in appearance like the rivers and their tributaries on a map, giving the sky the semblance of a great cracked ceiling. In some photographs *dark* lines have been observed among the others, of exactly the same shape, and branching from the flashes in exactly the same way. For this extraordinary phenomenon various explanations have been offered, but none that seem quite sufficient.

Among other photographs of natural phenomena, those of leaping and falling water and spray are very interesting. We reproduce an American photograph of the Whirlpool Rapids at Niagara—a very good and clear specimen. It was at about this spot that Captain Webb was drowned.



By Messrs. Underwood.]

THE WHIRLPOOL RAPIDS—NIAGARA.

Altogether the subject of quick photography is a most fascinating one. Although, as we have shown, the art is anything but an outcome of the last few years, it has probably an immense and almost undreamt-of future before it. By its agency, in conjunction with electricity, we are already promised facilities for observing a theatrical performance while sitting at home, what time the telephone or phonograph gives us the words and music of the piece.

Let us then watch quick photography, and prophesy its possibilities one to another.