

Animated Cartoons in the Making

How Sixteen Thousand Drawings Are Prepared and Photographed in Producing One Thousand Feet of Motion Picture Film

TO prepare sixteen thousand pen-and-ink cartoons, each a separate and distinct drawing, and then photograph them one at a time on a strip of motion picture film, is the task confronting the cartoonist who would amuse theater-goers by animating his work. And this is only the mechanical part of his new work; there remain numerous other details in the making of animated cartoon films which, together with those mentioned, make the undertaking anything but a sinecure. Perhaps the film requires a month or more in the making; yet on the screen it may take less than a third of an hour to put the cartoon characters through their mirth-provoking antics. Why the vast amount of work?

Somewhere in the downtown section of New York city is the home of the miles of animated cartoons produced by "Rube" Goldberg, whose work in the daily press alone is known to hundreds of thousands of newspaper readers; and here may be learned the many steps in the production of cartoon films, from the inception of the idea to the projection of the film on the screen.

Ideas are the big thing in cartoon productions. According to Mr. Goldberg, everything else is secondary. Given an idea, the remainder of the work is little more than a matter of routine, with occasional calls for ingenuity by way of either reducing the work involved when such is possible, or of securing unusual and clever effects. So it is that when an idea for a production has been properly worked out in the mind of the cartoonist, the mechanical processes are entered into.

Since an animated cartoon film tells its story by means of drawings, its production is entirely a matter of preparing the thousands of drawings necessary to carry out the creator's ideas. The animation of a picture calls for a number of separate drawings, each a trifle different from its predecessor; and it is in knowing just how different to make the successive pictures that the skill centers in producing a cartoon film. This, the all-important, task, is entrusted to one who is the master artist; the other work is relegated to a large staff of artists.

The various backgrounds of an animated cartoon are drawn but once, for it would involve a great volume of useless work if each drawing included its own background. The moving figures or animated objects, on the other hand, must each be drawn over and over again, with every successive drawing slightly different in order to convey the impression of animation or motion when the drawings are flashed rapidly before the eye, in their proper order of sequence. The sheets on which are drawn the animated objects are used in conjunction with the different backgrounds so as to make a complete cartoon. Sometimes the background may be in the form of a sheet of transparent celluloid, especially if the animated figure is to pass in back of the objects pictured on the transparent sheet. More generally, however, the background is in the form of a border covering certain parts of the sheet containing the animated object. Often the latter is cut out more or less so that its figure can be made to overlap portions of the background, to give the appearance of passing in front of the background.

Considerable talent and knowledge of motion is a requisite in properly animating a drawing, in spite of the seeming simplicity of the cartoons when viewed on the screen. The movements of the characters in an animated cartoon must be convincing and at the proper speed. If a man is walking down a street, for instance, the artist must know how many sketches are necessary to have his character cover the distance at the proper gait. If he uses too many sketches, the film production lags; if he uses too few, the movement becomes too jerky, and very trying on the eyes of the audience. It is therefore necessary for the master artist to know how to make each drawing in relation to its mates. He indicates the difference between one drawing and the next, leaving the details of finishing the drawings to other members of the staff.

The master artist works on an easel consisting of a slanting piece of ground glass held in a suitable frame, through which pass the rays of an electric lamp placed below it. Thus it is possible for him to lay a clean piece of paper over the last drawing and indicate on it the difference in position between the new drawing and its predecessor. And by rapidly waving one end of the new drawing, while it is still in place over the preceding one, he can tell at a glance the extent of the animation he has secured.

A considerable amount of thought must be devoted to

the audience's understanding of the picture. The center of interest in a cartoon must always be played up prominently by subduing other features. For instance, if one of the characters throws a missile, it is necessary that there be no further movement of his arm after the missile begins to travel across the picture. The character—and every other character, for that matter—must remain absolutely rigid so that the attention of the audience will not be distracted from the missile which at that moment is the center of interest. Then again, when a character is made to say something by the introduction of what is known as a "balloon" within which is hand lettering, there must be no motion in the cartoon until the audience has had time to read it.

Perfect register is a vital consideration in the preparation of animated cartoon drawings, because the tremendous magnification of the films on the screen causes even the slightest lack of register to result in a serious jump and a consequent strain on the eyes. Easels and the photographing apparatus are arranged always to maintain the different sheets of paper in the same relative position. In some instances the sheets are perforated with two holes, so as to engage with pins on the easels and on the photographing apparatus.

It is the preparation of the drawings that requires time; their photographing is a simple matter. As will be noted by the cover drawing of this issue, the photographing of the drawings is accomplished by using a motion picture camera mounted on a substantial wooden frame, with its lens pointing straight downwards. A framing or registering device is placed on the table directly below the camera, while on either side are mercury vapor tubes which supply the necessary light for photographing the drawings. The camera is electrically operated by pressing a push button at the side of the photographer, one picture being taken at a time.

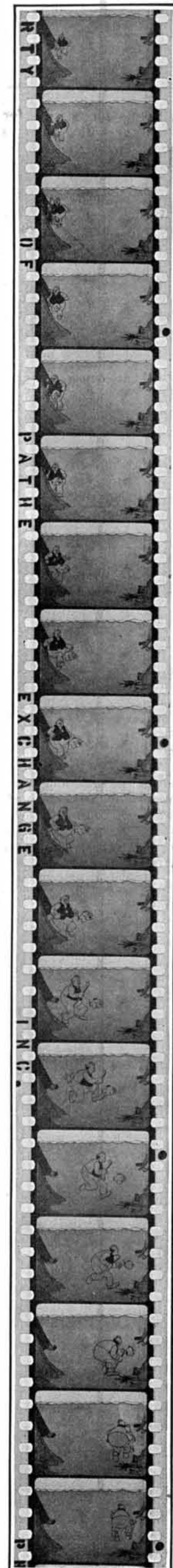
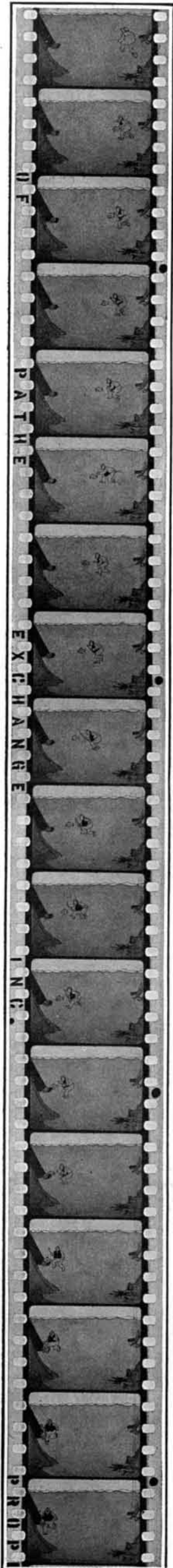
The photographer assembles the backgrounds and animated drawings in their proper order, taking successive pictures by pressing the button. With a pile of drawings to be photographed at one side of him, he takes one at a time, places it in the framing or registering device, presses the button to operate the camera, removes it, and is ready to repeat the process, this time with the next drawing. The work progresses at a fair rate of speed and in a manner not dissimilar to the feeding of a job press, although necessarily slower. In this way the thousands of exposures are made at the rate of sixteen to every foot of film exposed.

By the clever manipulation of a set of drawings it is sometimes possible to avoid making a large number of drawings for conveying a certain idea. For example, a long freight train moving by one point may be represented by a locomotive, tender and several freight cars, after which a group of freight car drawings may be used several times over to carry out the idea of a long train of cars. This procedure in varied forms to meet specific cases is often resorted to.

With the negative once exposed, there remains little else to complete the production of animated cartoons but developing, editing, inserting the titles, assembling, and then printing as many positive films as may be necessary to allow the film to be simultaneously exhibited in picture theaters here and abroad.

A New Paper-Making Material from India

THE possibilities of utilizing the kaing grass of Burma for paper making have for some years past been investigated by persons interested, and it is now announced that the conversion of this grass into pulp and subsequently into paper can be accomplished in a simple and economical manner. It is expected that arrangements will soon be completed for the collection of the grass, its conversion into pulp, and its shipment in this form to paper makers in the United Kingdom. The yield of unbleached pulp is 39 per cent, calculated on the air-dry grass. This does not compare badly with esparto grass, from which about 43 per cent of unbleached pulp is obtained. Kaing grass grows in great profusion in all parts of Burma, frequently reaching a height of ten feet. As a paper-making material it may be classed with esparto grass, and is much cheaper, though the quality of the pulp is not quite so good as that obtained with esparto. Esparto grass is to a large extent cultivated, whereas kaing grass grows wild and is sometimes rank and coarse. By systematic cutting, however, over properly preserved areas, a finer grass of uniform quality can be obtained in a very short time.



Two successive strips of animated cartoon films, showing the difference between successive drawings