PROCESSION OF THE GIANTS.

Among the most interesting ceremonies in Europe are the giants' processions, as they are termed, which are held annually in various cities. They are especially popular in the Flemish provinces of France and Belgium, where every community of importance has some personage of huge proportions intended to represent a hero or other notable of the past.

Although of enormous size, as the photograph shows, the giants are carried about the streets with little difficulty, owing to the material of which they are composed. The skeleton is usually formed of light wood with possibly one or two iron rods extending from the head to the feet to give strength to the structure. Over the skeleton is fastened a stiff fabric, such as canvas, and the proper proportions are obtained by padding with cotton, hay, or some other suitable material. Upon this groundwork is placed the papier-maché which usually forms the exterior. This substance is so light and is applied with such skill that the resemblance to the human features and figure are really remarkable. Occasionally the face is formed by a mask showing the flesh tints, but the majority of the giants may be termed enormous dolls, since their mode of construction is so similar to that of this familiar toy, and so much of the same material enters into their composition. The group of giants in the accompanying photograph are known as the Gayon family, and are among the largest in Europe. The father of the family is no less than 20 feet in height, from the top of the plumes in his helmet to his feet, while his spear is over 20 feet in length itself and the shield larger in circumference than the wheel of an ordinary wagon. Madam Gayon is 18 feet in height, but, as the illustration shows, of excellent proportions and extremely lifelike in appearance. They are supposed to have three children, the largest of whom is 11 feet in height, the next 10 feet in height, while the one called the "baby," which can be seen to the left of the mother, is a foot higher than any of the crowd of people surrounding the family.

At least once a year the giants are placed upon vehicles and drawn about the streets in a procession, in which military and civic soldiers take part, their escorts sometimes numbering a thousand people.

PROCESSION OF THE GIANTS.

The New Anæsthetic.

In a recent issue of the Clinique (Vol. 26, No. 7) Dr. Theodore S. Proxmire refers extensively to somnoforme, a new anæsthetic, that has been thoroughly tested at the Bordeaux School, Paris, and throughout the British Isles. Somnoforme is a combination of chloride of ethyl 60 per cent, chloride of methyl 35 per cent, and bromide of ethyl 5 per cent. The administration of somnoforme is very similar to that of nitrous oxide. The average dose of two and one-half cubic centimeters has an average induction of 30 seconds and an average duration of 78 seconds. When properly and carefully given there are practically no after effects whatever. There is a complete absence of respiratory trouble; the heart is slightly stimulated throughout the administration; the complexion remains normal, and there is no cyanosis whatsoever.

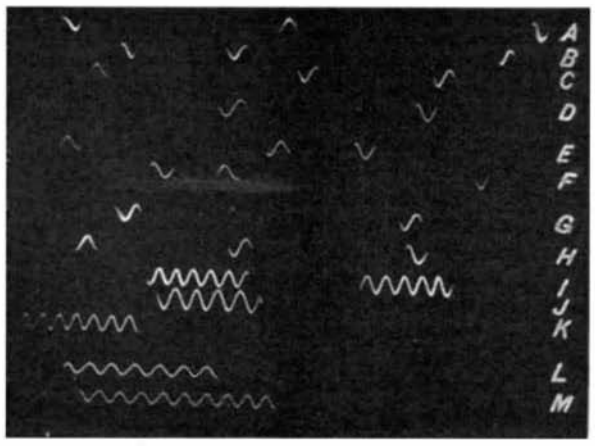
DETERMINING THE SPEED OF A PHOTOGRAPHIC SHUTTER.

BY J. IRVING TRACY.

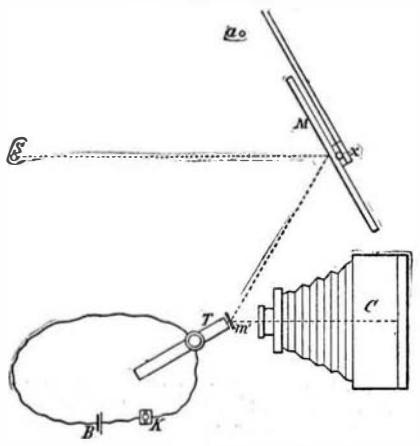
A modern photographic camera is usually fitted with an automatic shutter, which opens for a specified time to expose the plate. The accurate timing of exposure is of first importance to the photographer. He usually depends on the dial of his shutter to give the exact time. In some cases the time the shutter is open depends also on the size of the stop used, and the time indicated by the dial may not be the time of exposure.

When a ray of light falls on a mirror which is attached to a vibrating tuning-fork, it is reflected as a straight line of light. If, however, the ray of light is reflected on the vibrating mirror by a revolving mirror, the line of light is drawn out into a sine curve, and each wave of the curve represents one vibration of the fork, and hence the time of one vibration. A camera can be focused on this curve, and if photographed, the product of the number of waves by the period of the fork represents the time of exposure. For visual observations the persistence of vision will enable the observer to determine the number of waves for exposures less than one-tenth of a second.

The apparatus is set up according to the figure. *M* is a mirror revolving on the axis, *x*; *T* is an electric tuning-fork with a small mirror, *m'*, attached; *S* is the source of light, and the dotted line shows the direction of the light. Focus the camera, *C*, on the spot of light. As the mirror, *M*, turns from *a* to *b* the spot of light passes from one side of the ground glass of the camera to the other. Start the fork vibrating by means of the battery, *B*. After noting the position of the index and the size of the stop, snap the shutter while slowly turning the mirror between *a* and *b*, and observe or photograph the number of waves produced. When the waves are photographed, several exposures can be made on the same plate by having the room dark, and the camera so arranged on an adjustable stand that the back of it can be raised or lowered without changing the position of the lens in front of the fork.



The Records from Which the Speed of the Shutter is Determined.



Arrangement of the Mirrors.

The annexed print will give an example of the results of this experiment. The conditions of exposure are given in the table. The fork used has a period of one-fiftieth of a second.

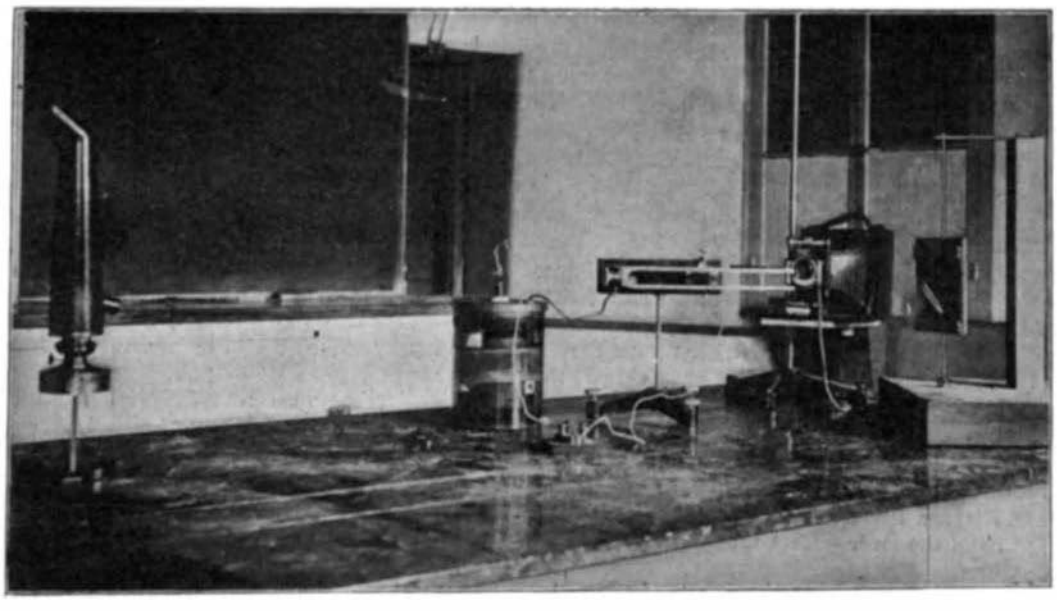
For this experiment the source of light should be small, and as intense as possible; either a lamp with a dark chimney which has a small hole in it, or an arc light placed at some distance from the mirror. The camera should be very near the vibrating mirror. To avoid secondary waves, which are caused by reflections from the glass surface, the mirrors used should be silvered on the top side. This makes the waves much clearer without changing the results.

	Index.	Stop.	Waves.	Time in sec.	Error per cent.
A	I	6.2	.9	018	—
B	I	8	.9	.018	—
C	I	11	1.	.02	—
D	I	16	1.	.02	—
E	1/50 sec.	16	1.	.02	0.
F	" "	11	.9	.018	10.
G	" "	8	1.	.02	0.
H	" "	6.2	.9	.018	10.
I	1/4 "	6.2	5.1	.102	59.2
J	" "	8	4.75	.95	62.
K	" "	11	6.75	1.35	46.
L	" "	16	6.6	1.32	47.2
M	" "	32	9.5	1.9	24.

It will be seen that the exposure varies as much as 60 per cent from the indicated value for this particular shutter. For another shutter tested, the exposure was very much decreased by decreasing the stop, and showed other irregularities which would not ordinarily be observed, save by the over or under-exposure of the plate. Every photographer will appreciate the importance of knowing the exact time of his shutter under various conditions.

Turin Hydraulic Plant.

One of the largest of the hydraulic plants in the north of Italy is the station which has been erected in the Alpine region at the foot of Mont Cenis in order to supply current to the city of Turin over a long transportation line. The new station is remarkable both for the power now generated and the provisions for the future, as well as the high tension which is used on the line. The station is installed on the Italian slope of the Alps, and uses a fall of the Cenischia torrent, which is fed from glacier water. A 2,700-foot head of water is secured here, with an output of 300 gallons per second. This represents about 12,000 horse-power available from the fall. This is to be raised to 16,000 horse-power by future hydraulic work. In order to avoid the trouble which might arise from using a too high pressure in a single station, it was decided to erect two separate plants one above the other, and obtain half the power in each. The station which is erected at the lower part of the fall has been built first, and a second higher up will follow when required. The present plant contains three direct-coupled generating groups of 1,600 horse-power each. All the electric part of the plant is furnished by the Mediterranean Thomson-Houston Company. Two more groups are to be added. The turbines, of the Piccard and Pictet make, run at 500 revolutions per minute on a 1,300-foot fall. The alternators work at a tension of 3,000 volts. Owing to the length of the line to Turin, a tension of 30,000 volts is employed, secured by transformers having water circulation.



METHOD OF DETERMINING THE SPEED OF A PHOTOGRAPHIC SHUTTER.