may perhaps care to try the effect of focussing the received image on to a ground-glass screen by means of a converging lens. The resulting image will then be erect, but brilliance will be lost.

Working Adjustments.

Having made the stencil, it should now be adjusted in its holder, the projector lamp being switched on so that the shadow is thrown on to the spiral disc. The latter is then slowly rotated by hand and the passage of the square apertures over the shadow observed; the outermost aperture should trace exactly the outer vertical limb of the H, and the stencil should be adjusted until this is the case. When this has been achieved the innermost aperture should trace over the inner vertical limb, while the remaining light apertures should pass over the horizontal limb one by one, if the stencil has been cut accurately and the light beam is truly parallel.

The interruptor disc should then be started, and about 30–50 volts switched on in series with the selenium cell. The filaments of the amplifier should then be switched on. Switch off the projector lamp and adjust the filament rheostats so that the amplifier does not oscillate. Oscillation is indicated by the neon tube, which will suddenly light up very brilliantly. Should this occur the last valve should be switched off, or it may be seriously damaged. The other filaments must be reduced in brilliancy before again switching on the last valve.

Focussing the Projector Lamp.

Having stabilised the amplifier, the description of which appears elsewhere in this issue, switch on the projector lamp and see that the image of the filament remains on the cell during the whole time of illumination of both the vertical limbs. While this is the case the neon tube should light up, but should remain dark when no light is falling on the cell. Once this condition is attained the motor driving the spiral disc should be switched on, and the speed adjusted by the rheostat until the image of the H is formed clearly and distinctly when the neon tube is looked at through the spiral disc.

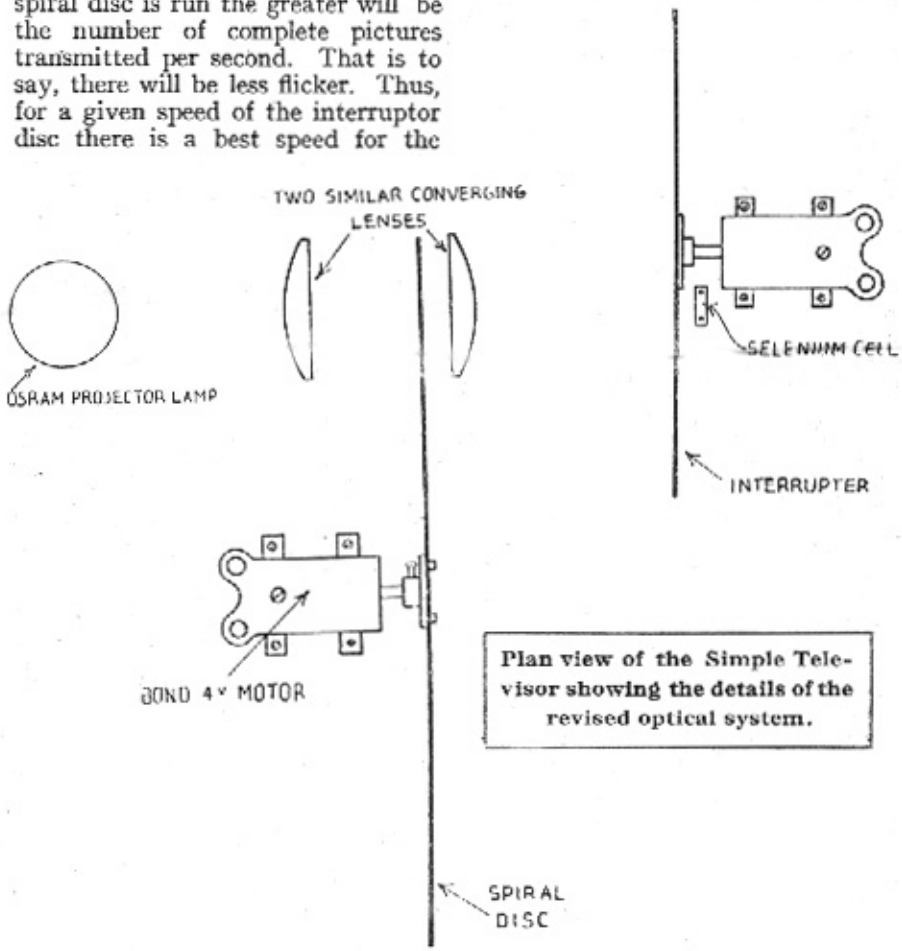
It is necessary for the interruptor disc to be run very fast so that the picture has as fine a "grain" as possible. This will be more readily grasped if the stencil is removed and the appearance of the bright field of view at the receiving end is examined while the spiral disc is being speeded up. The faster the latter is run in relation to the speed of the interruptor the more will the field of view resemble a chessboard arrangement, and this can only be counteracted (i.e., so that the field is uniformly bright) by increasing the speed of the interruptor.

On the other hand, the faster the spiral disc is run the greater will be the number of complete pictures transmitted per second. That is to say, there will be less flicker. Thus, for a given speed of the interruptor disc there is a best speed for the spiral disc. This best speed is a compromise between the two extreme conditions—a fine grain and a complete absence of flicker.

There is also a further consideration which limits the speed of both the spiral disc and the interruptor, and that is the lag of the selenium cell. This can be easily demonstrated. Keeping the frequency of interruption constant, speed up the spiral disc and watch the horizontal limb of the image of the letter H. It will be observed to shift in the direction of rotation of the spiral disc to quite a noticeable extent, often as much as half an inch, while at the same time it broadens out.

In addition it will be noticed that whereas, at slow speeds, the upper and lower edges of the horizontal limb were sharp and well defined they now shade off gradually, while the whole broadens out considerably to perhaps more than twice its original width.

It is impossible in a single article to deal with all the possibilities of this little machine, or with all the experiments that can be performed with it. Enough has been said, however, to show the enormous scope there is for the amateur experimenter to modify or to improve the apparatus in accordance with the indications resulting from his own research.



Plan view of the Simple Televisor showing the details of the revised optical system.

Full size Blue Prints of the discs described in our last issue are still available, price 2/-; post free.