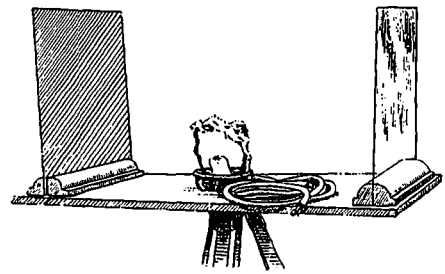
instead of the artistic results they had hoped for.

At the risk of going over what is perfectly well known to many, if not most, of those present, let me mention some of the essentials for success in this line of work. The lens, preferably one of the "R.R." type, must not be stopped down below *f*/11; the plates used must be fast ones, such as the Cramer "C" or the Seed 26[x]; the background must not be too near the sitter or it will show direct shadows, and its tint should be lighter than for use with daylight. The correct focus is most easily and rapidly obtained by the use of a lamp, a newspaper and a focusing glass. Let the light of the lamp fall on the newspaper, held upside down and raised, lowered or carried out to the sides, in order to determine just what will and what will not come upon the plate. As a general rule, the gas or lamp lights should be turned up, so long as they do not shine into the lens, and they should light up that side of the face which will not be lit by the flash. In this way its shadows are softened and hard lines avoided. It is a good plan to have the sitter look directly at one of the gas jets or lamps. He will thus not be so much disturbed by the sudden increase of light when the flash is made, and will not be so apt to have a startled or staring look or to close his eyes suddenly.

I think the advice often given to place the flash apparatus over the camera is an error. It is better to have it placed higher than the lens and to one side or the other of it. An exception to this is seen where a fire-side or camp-fire group is to be taken and the object is to make it appear as though their faces were lit up only by the fire around which they are placed. Even in photographing a cavity like the back part of the throat, I have found the detail brought out best when the light came from a position slightly to one side of the lens. For diffusing the light, and so obtaining soft instead of hard negatives, a sheet of ground glass is excellent, and a sheet of bright tin makes as good a reflector as need be desired. I have used for more than two years the convenient arrangement now shown, and consisting of a piece



of board fifteen to twenty inches long by one foot wide, with a plate fixed to the middle of its under surface, so that it may be secured upon any tripod stand. At each end of its upper surface a pair of parallel wooden strips are nailed so as to form slots to support, in up-right positions, the tin reflector and the ground-glass diffuser. Between these two the flash lamp is placed. After trying a number of the patented articles, I have reached the conclusion that the simple one which I devised, and described in the *Beacon*, gives as good results as any other, and has the advantage of being easily made by any-one with skill enough to press a button. A flower-pot saucer has a hole bored through its rim to allow of the passage of the stem of a clay tobacco pipe. The bowl of the pipe is to be fixed upright in the middle of the saucer by means of plaster of Paris. A rubber tube, ending on a mouth-piece, is fitted over the stem of the pipe. Next a wire ring, supported at a height of three or four inches, is placed so as to surround the pipe bowl, and upon this ring asbestos wicking is twisted.

When it is desired to make a flash, from five to twenty grains of pure magnesia powder is to be placed in the bowl, and the wicking is to be saturated with alcohol. Lighting the alcohol, and then blowing through the tube, forces the powder into the long axis of the flame, and perfect combustion takes place. By a number of experiments, I have demonstrated that a sudden, strong blast which lifts the powder in a mass out of the pipe does not give as good result as a gentle, promptly followed by a forcible, blowing. This latter method loosens up