

Co-operative Homes.

Mr. Joel A. H. Ellis, superintendent of a co-operative household in Ionia, Fairfax Co., Va., offers in the *American Socialist*, the following argument in favor of that style of economizing expenses. The one fatal defect in the plan would appear to be the impossibility of getting ordinary men and women to live together peaceably under such relations for any length of time. However, the experiment may be well worth trying to those who care to make it. Mr. Ellis says:

"The very large saving that may be made in supplying people with homes and a livelihood by means of co-operation is not well understood. It can be made to reduce the cost of a home and the expenses of living fully one half. To illustrate how this may be done, suppose we have three hundred people to provide with a home. If we divide them into families of five persons each, we shall have sixty families, and each of them will require a dwelling, a set of furniture, and a housekeeper. If we keep them in one large family, they will require only one large dwelling instead of sixty small ones. This large house will cost twenty thousand dollars. Sixty small ones of similar quality would cost one thousand dollars each, or sixty thousand in all. The small families would require sixty cooking stoves with furniture at a cost of twenty-five dollars each—fifteen hundred dollars in all; while the large family would do their cooking with two large ranges and a brick oven that cost only five hundred dollars. The furniture in each of the sixty small parlors would cost at least one hundred dollars—six thousand dollars for them all. The large family would need only three parlors, which could be suitably furnished for one thousand dollars. A sewing machine for each small family at thirty dollars each would cost eighteen hundred dollars. Six such machines would do all the work for the large family, and would cost only one hundred and eighty dollars. To furnish each of the small dwellings with a piano, if they should indulge in such a luxury, would cost, at three hundred dollars each, eighteen thousand dollars; while a piano, an organ, and the instruments for a band would supply the large family with all the music they would desire at a cost not exceeding eighteen hundred dollars. To supply each of the small families with a single weekly newspaper, at two dollars each, would cost one hundred and twenty dollars. This sum would place in the reading-room of the large family, five daily papers, twenty weeklies, and ten monthly magazines. The money required to supply the small families with the fixtures with which to do their family washing would furnish the large family with a well-appointed steam laundry, in which their work of this kind could be done with one fourth the labor required to do it by hand. The time of the sixty housekeepers for the small families would be worth, including board, \$4 per week—\$208 a year for each family, or \$12,480 for them all; while in the large family, with their superior facilities for doing their housework, thirty women would be able to do it much better and easier than sixty could do that of the small families, and we should save \$6,240 a year in the expense of doing our housekeeping, and have it much better done. The large family, by buying their supplies at wholesale in quantities, would save at least fifteen per cent of their cost when bought at retail by the small families.

"These examples are sufficient to convince any practical, thinking person that the saving which may be made by living in well organized co-operative homes is so large that none but the rich can afford to live in any other in times like these; that the amount which may be saved by introducing this style of living is so large that it would soon make the poor rich—so large that those who did not adopt it could not compete successfully in any business with those who did, because their expenses would be so much larger. The time has arrived when this method of living must be adopted to relieve the working class from their present distress."

Mr. Ellis says that a co-operative home has been organized at Ionia on this plan; but he gives no particulars with regard to its inner life and organization. If it comprises a congress of distinct monogamic families in one household, and is harmonious and flourishing, the experiment is a valuable one.

Keep Your Cement in the Dark.

Dr. Heintzel thinks that the influence of light upon cement has not hitherto been sufficiently considered. He instituted some experiments upon a quantity of cement, which he divided into three parcels, exposing parcel A to the air and full light; B to the air and diffused light; and secluding C in darkness from the air.

After six months he found that A made a weak mortar by absorbing 38 per cent of its weight in water, and it had become crumbly; B, with 33 1-3 per cent of water, made a mortar which was too adhesive to the trowel, and it yielded up none of its water; C, with 33 1-3 per cent of water, made an excellent mortar, easily stirred and flowing, and it relinquished some of its water. After setting for twenty-eight days the relative strength was: A, 3; B, 37.9; C, 44.6.

Remedy for Trichina.

Dr. Rohde relates, in the *Berliner Klin. Woch.*, a case of trichinosis in which severe bleeding of the nose occurred, and in which he prescribed extract of *secale cornutum* as a styptic. The hemorrhage was immediately arrested, and with this rapid improvement of the general symptoms also occurred. This result led him to prescribe ergot in other cases of the disease; and in all instances distinct improve-

ment followed. He believes, therefore, that we have, perhaps, in ergotin, a means of treatment which, without having any marked effect on the human economy, may prove fatal to trichina and their offspring.

NEW ELECTRICAL DIAPASON.

[Continued from first page.]

the spring connecting pieces that project from the back of the vibratory tongues.

The holes in the spring connecting pieces are made larger than the needle, and pieces of thin leather are attached to the connecting pieces to form a yielding bearing for the needle. To the outer end of the needle is secured a small concave mirror, in front of which a small plano-convex lens is supported by a jointed arm projecting from the main frame of the instrument.

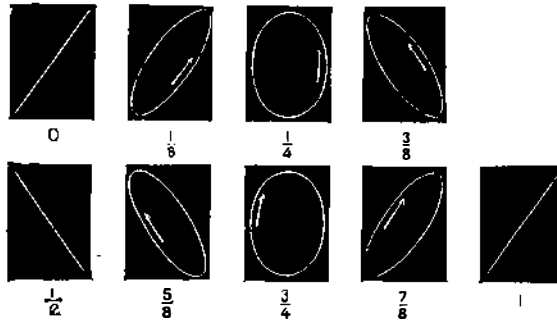


FIG. 3.

A beam of parallel rays being thrown on the concave mirror from a lantern or *porte lumière*, and the vibratory tongues being set in operation, a figure will appear upon the screen on which the instrument is focused, which will be the resultant of the two rectangular vibratory motions. This figure depends on the persistence of visual sensations on the retina, for it is really due to the rapid movement of the light spot which is seen when the tongues are at rest. The figure may be varied by moving the slide so that any possible combination of tones within the compass of one and one half octave may be produced. It is interesting to observe the change of figure resulting from the slightest alteration in the adjustment of the slides, or from the change of phase resulting from an alteration in the adjustment of the contact screws. The tones that accompany the figures are full

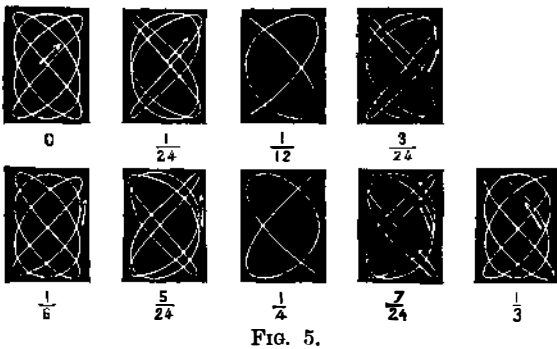


FIG. 5.

and deep, especially if the instrument be mounted on a sounding board. The effect known to musicians by the name of "beat" can be produced by this instrument, so that they may not only be heard with distinctness, but may also be seen.

If only one tongue vibrates a straight line will appear on the screen, which will be inclined at an angle of 45° from the horizontal. The line produced by one of the tongues forms a right angle with the line produced by the other, and when both tongues vibrate simultaneously the two motions combine, and the reflected pencil describes a more or less complex curve, the form of which depends on the number of vibrations of the two tuning forks in a given time.

Fig. 3 shows the luminous image on the screen when the tongues vibrate in unison, and the fractions below each fig-

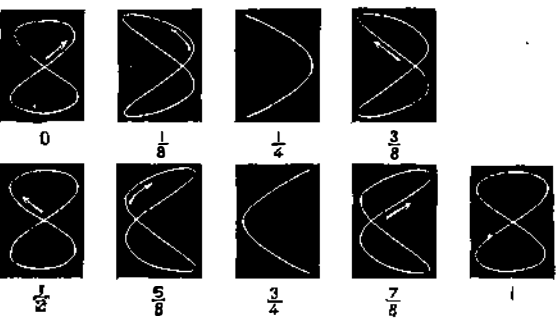


FIG. 4.

ure indicate the difference of phase between them. The curve retains its form when the tongues are in unison, but when they are not quite in unison the initial difference of phase is not preserved, and the curve passes through all its variations. Fig. 4 represents the different appearances of the luminous image when the difference between the vibratory tongues is an octave; and Fig. 5 represents curves when the number of vibrations are as 3 : 4. The loops along the vertical and horizontal edges express the ratio of the combined vibrations. The variety of figures that may be produced by this instrument is endless.

When sunlight is employed to project the figures the mirror may be plain and very small, and the lens may be dis-

pensed with. The figures, when viewed directly in a plain mirror of one inch diameter, appear as wires of burnished gold interwoven in a most complicated and beautiful manner.

LAMPBLACK.

One of the largest establishments for the manufacture of lampblack is at Petrolia, Pa. The method of production is remarkable. The flames of several thousands of gasjets are made to impinge against sheets of slate, on which the smoke or fine carbon is deposited, just as a piece of glass is smoked when held over a candle flame. When a sufficient deposit of the smoke has formed on the slates, it is scraped off, packed, and sent to market.

The gas which supplies this lampblack comes from the ground near the works. Besides its oil wells, Petrolia is celebrated for its wonderful gas wells, which furnish inexhaustible supplies of fuel for steam engines, heating, cooking, etc.

From Petrolia to Pittsburg there is an oil pipe line by which oil is driven to market by force pumps, operated by steam power; the boilers being heated by gas supplied by one of the gas wells. We almost wonder that the Petrolia people do not introduce the use of gas engines and thus dispense with the use of steam boilers.

Improvement in Rifle Shooting.

The scores made at Creedmoor, Saturday, September 21, in the long-range match for the Wimbledon Cup, seem to show that the limit of skill in shooting and rifle making is not yet reached. Before many years, an unbroken score of thirty bull's eyes at 1,000 yards will have to be credited to some American rifleman.

The Wimbledon Cup was won in England by Major Fulton with a score of 133 out of 150, and subsequently carried off at Creedmoor, by Allen and Dudley Selph, with scores of 139 and 137. This year Frank Hyde has it with a wonderful score—143 out of 150 at 1,000 yards; while Sumner and Gray, with scores of 142 and 141 respectively, repeat Miller's famous exploit of 15 consecutive bull's eyes at the long range, and ten riflemen run over Fulton's English score. When it comes to team shooting, fours from Massachusetts and New York make a total score of 1,681, which is 52 points ahead of the best score made by the British eight in the International match.

Diamonds in China.

Mr. Fauvel, of Chefoo, communicates in the *North China Herald* some interesting facts concerning his researches into the mineral wealth of the district of Shantung and the curious means of collecting small diamonds by the natives.

"These diamonds," he says, "varying in size from a millet seed to a pin's head, are procured from the glaziers, who buy them at the large fairs held every year at Chū-chow, Laichow-fu, and Hwang-hsien. They are not to be found in shops, and are packed in quills. The manner of finding these stones is very curious. Men with thick straw shoes on go walking about in the diamantiferous sands of the valleys and streams of the diamond mountains, Chinkang-ling, some fifteen miles south-east of Yichow-fu. The diamonds, which are ragged and pointed, penetrate the straw and remain there. The shoes are then collected in great numbers and burnt, the diamonds being searched for in the ashes. As is the case with amethysts and rock crystal in the Lao Shan, the priests of the temples in the Chinkang-ling are the principal dealers."

Mr. Fauvel further mentions that a diamond as large as a pea had been brought to Chefoo, and sold to a mandarin there.

The Grand Canal of China.

FOR six or eight hundred years the Grand Canal, crossing the great plain of Northern China, from Peking, in the north, to Hangchow, in the south, has been the chief line of communication and commerce between the capital and the southern portions of the Chinese Empire. The canal proper is more than six hundred miles long, and, with its branches, is said to supply two thousand miles of water-way and the means for irrigating and reclaiming many thousand square miles of thickly peopled country. During recent years, however, the vast sums appropriated for the management and repair of the Grand Canal have been so largely absorbed by dishonest officials that the canal has become practically unfit for commerce in many parts; while the estimated cost of putting it in good condition is so hopelessly beyond the capacity of an empire impoverished by war, famine, and official rapacity, that the Imperial Government are seriously considering the propriety of abandoning the canal entirely. For the first time since the canal was built the food supplies from the south for the support of the capital (and for the relief of the famished-stricken regions to the north and west) have this year been forwarded by sea—a much speedier and more economical route, no doubt; still, for the great plain and its millions of inhabitants, the canal is a practical necessity, and, to let it go to further destruction, will seriously endanger their prosperity, if not their lives.

Punch says that a Yankee baby will crawl out of his cradle, take a survey of it, invent an improvement, and apply for a patent before he is six months old.