

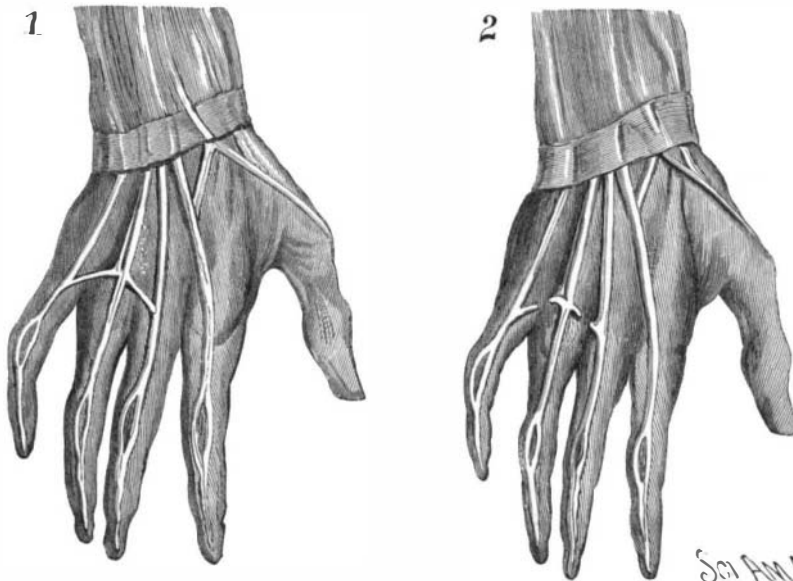
SURGERY FOR PIANO-FORTE PLAYERS.

The most earnest advocates admit that evolution is an extremely slow process: that it produces wonderful results, but that its operations occupy a corresponding amount of time. Certain it is, that the process is not keeping pace with the requirements of modern times, and that the artificial development of the human faculties has of late taken precedence over the natural results of time.

Helmholtz, after making an exhaustive study of the human eye, declared that should he receive an optical instrument of man's making which contained so many defects as the eye, he should be justified in returning it to the manufacturers. But it is these very defects which have stimulated man's ingenuity to find a remedy. So completely has the science of optics come to his assistance, that with the help of the lens in microscope and telescope, he is possessed of an organ capable at once of studying the infinitesimal world represented by a drop of water or of penetrating the immensity of a solar system. Yet no progress, except, perhaps, in the power of discrimination, is being made with the living instrument, for the eye of the present school child is probably much inferior in strength and capacity to that of his pioneer grandfather at an equal age.

In other directions, however, man may be improving. His hands, from their constant use of sensitive instruments and their employment in painstaking investigations, have probably gained a nicety and delicacy of touch which were quite unknown to earlier generations. But even here, the progress has not been sufficient to satisfy his wants, and the anatomy of the hand is undergoing a number of modifications due to special treatment or to surgical science. The delicate manipulations of the chemist and physicist or the effective touch of the artist are by no means natural; they result only from the most careful training. In music, whether in using the keys of an instrument, or in working the strings directly, as in zither or harp, every student remembers the weary practice which has gained him his present proficiency. No amount of devotion, however, seems to have succeeded in overcoming the obstinate weakness of the third or ring finger. Innumerable exercises and daily fingering of the keyboard have left that member but slightly stronger at the end than in the beginning. When, for instance, the middle and little finger are pressed upon the keys to produce a continuous sound, it is almost impossible to bring the ring finger into intermittent use with a strength sufficient to produce any equality in the tones. The reason is very simple, but rather curious. The extensor communis digitorum muscle, which moves the ring finger, is connected by lateral or

accessory tendons with the muscles of the neighboring digits, and when these are held down, the accessory tendons prevent the free action of the muscular fibers of the third finger, and hence the clumsy result. These accessory tendons are sometimes found in both hands, often only in one, which in this case is usually the right hand. Occasionally, the extensor muscle of the ring finger splits at the point of departure of the accessory tendons, and when reunited leaves a button hole appearance, and now and then these tendons are en-



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tirely absent. The possibility of removing this restriction in the use of the ring finger by dividing the accessory tendons suggested itself many years ago, but it is only of late years that the operation has become at all common. Dr. Forbes, the Demonstrator of Anatomy at Jefferson College, and Mr. Zeckwer, the Director of the Philadelphia Musical Academy, have both been much interested in the subject, and have done much to make the operation popular.* By this division of the accessory tendons, the liberation of the ring finger was complete. After such an operation, which is often performed on both hands at one sitting, and without the loss of perhaps more than half a drachm of blood, the finger could be elevated an inch higher above the plane of the hand, and could be used with delightful freedom. There was an entire absence of the sense of exertion which was formerly so painful. Out of fourteen operations which have been performed by Dr. Forbes, all were entirely successful, and in none did any unpleasant results follow. Nor is this result-

* The illustrations show respectively the muscular system of the right hand in its natural condition and after the operation has been performed.

ing liberty at the expense of power in any other direction. The operation does not decrease in the least the ordinary functions of the extensor muscle. Since it can be performed by a surgeon of any competence, it promises in time to become a part of every conservatory course.

As the downwardly projecting point on the helix of the ear is considered by evolutionists to be the remnant of a once pointed ear, so it is not unreasonable to suspect that the unnecessary tendon may be the last traces of a former webbed formation of hand and foot. That its occurrence is not constant is an undoubted proof of its rudimentary nature. It is quite possible that future students of music will hear with wonder of a binding tendon quite unknown in their own experience.

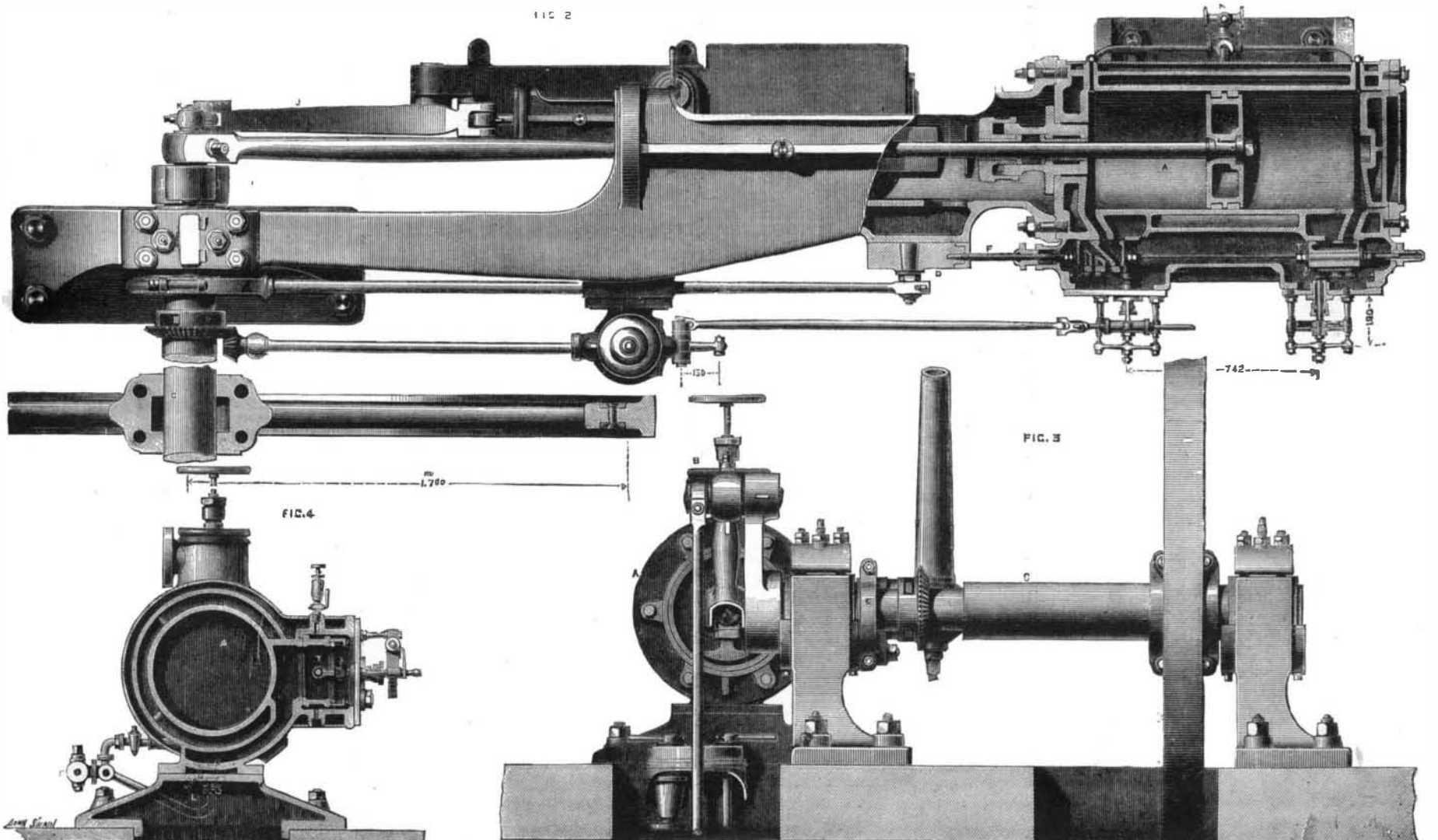
FIFTY HORSE HORIZONTAL ENGINE.

The engine we illustrate is one of a type made by the Societe Lyonnaise, Paris. It has been fixed in the Hotel du Credit, Lyonnais, Paris, for driving the dynamo electric machines which provide currents for the Brush lamps, by which this establishment is lighted.

The distribution of the steam is effected by means of the eccentric, E, and two Farcot valves, T T', on the one spindle, F, guided by the slide, D. On the back of the valves slide two cut-off valves, t t', the movement of which is determined by the governor through the medium of two half cams. On the axes of these cams are fixed two helicoidal pinions, movable by the two screws and the hand wheel, G.

By this means the position of the cams is adjustable, and thereby the cut-off, through a range of from one-fifteenth to one-half the stroke. The arrangement secures very short steam ports. The governor is of the Buss type, driven by gearing, and steadied by an air cushion in the cylinder, H. The engine is fitted with an injection condenser, the double acting air pump of which is actuated by a bell crank lever, and the rod worked from the crank. The bell crank lever also operates the feed pump. The cylinder and its ends are steam jacketed. The condensed water cocks in the cylinder are both moved by one lever, L, and the pipes from them converge in a cock, R. The engine, in case of need, can be worked without the condenser, by closing the admission thereto of the exhaust by the valve shown attached to the condenser, and allowing it to pass into the air. Our information is taken from the *Annales Industrielles*.

VELOCIPEDES of every kind have been expelled from the streets of Berlin by an ordinance of the police, the legality of which has been upheld by the Prussian Court of Common Pleas.



A FRENCH 50-HORSE POWER HORIZONTAL CONDENSING ENGINE.