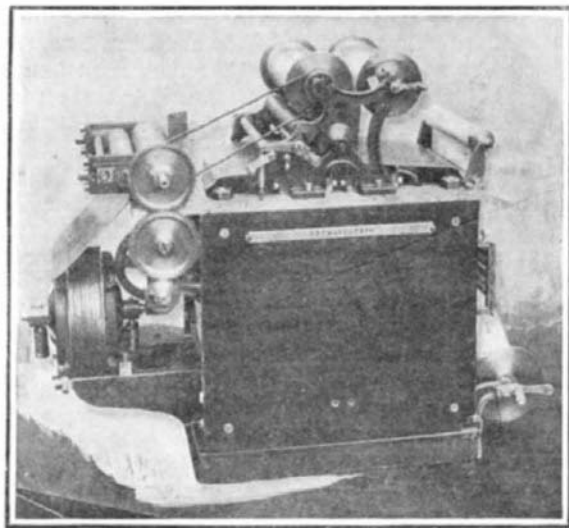


THE KROMAROGRAPH—AN AUTOMATIC MUSIC-RECORDING APPARATUS.

BY DR. ALFRED GRADENWITZ.

While the phonograph affords a means of recording the spoken word or a sound, and the modern methods of mechanical writing, both stenographically and by means of the typewriter, enable language to be fixed graphically at the same speed it is spoken, a device for registering the notes produced by a musical instrument has so far been wanting. Such an apparatus would be of universal value to the composer, because



The Kromarograph.

in transcribing his composition to paper much time is lost and the creative power thereby impaired.

None of the numerous attempts made of late years to construct an apparatus of this kind has been successful, owing to the complication of mechanism and to the illegibility of the records. A machine invented by Mr. Laurenz Kromar, of Vienna, Austria, which has been exhibited at the International Musical Exhibition recently held in Berlin, seems to solve the problem satisfactorily. Readily connected with any type of keyed instrument, it automatically records the notes played in characters which closely resemble ordinary notes, and which are most easily read or transcribed. The apparatus works without any disturbing noise, is about the size of a typewriter, and is operated by electricity.

As seen in one of our illustrations, the most striking part of the apparatus is a set of rollers operated by a small electric motor, which rollers uniformly carry a paper tape over the types. As the keys are pressed down the types are actuated by an ingenious system of eighty-seven electro-magnets (each controlled by one key). The type corresponding with the key is attracted with extraordinary precision, registering its corresponding note on the tape of paper as it runs past.

The motor is driven either by direct or alternating current at 110 volts, its operation being controlled from the musical instrument by the aid of special contacts. Owing to the arrangement of the types and special provision for the upper and lower keys, each note accurately falls on or between the lines.

The note system of the kromarograph, as the machine is called, closely resembles the usual system of note-writing, the treble and bass of the five-line system being retained. The reading of eighth, sixteenth, and thirty-second notes is facilitated. Each white key corresponds with a double dash and each black key with an intermediary single dash of greater thickness. C-sharp and D-flat, D-sharp and E-flat obviously coincide in the new system, corresponding as they do with the same key of the piano, while their harmonical signification in the composition will be apparent. As soon as a note has been recorded, the ruling roller automatically continues the ruling, so as to prevent any displacement of the notes.

The tempo is marked by a number of rhythmical dots corresponding with the tempo dashes of the ordinary note-writing system, these dots being produced in the course of playing, not automatically, but rather according to the player's discretion by means of a special pedal.

The length of notes and rhythm of the tune are recognized by the length of the dashes produced by the types, which length strictly corresponds with the duration of the pressure on the key, a short touch leaving a short dash, and a prolonged touch a longer dash. Because of the uniform motion of the tape, the length of dash accurately corresponds with the duration of notes, while gaps between two subsequent

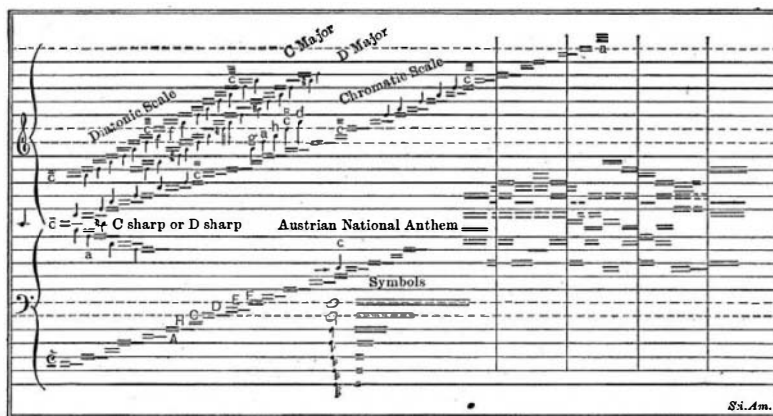
dashes represent the lengths of interval. If the same tempo is maintained, the rhythm will be readily ascertained even without the dots referred to above, while each *ritardando* results in a lengthening, and each *accelerando* in a shortening of the length of dash. Not only any details as to the touch and cadence, but any inaccuracies in the performance will be faithfully reproduced in the record. *Staccato* will be inferred from the shortness of dashes and the length of pauses, and *legato* from a succession of dashes without interval. A *glissando* will be characteristically reproduced by a dotted line, which is the more approximately vertical as the speed of playing is greater. *Arpeggios* and trills are likewise rendered in some characteristic way.

Transmission of Rabies by a Scratch.

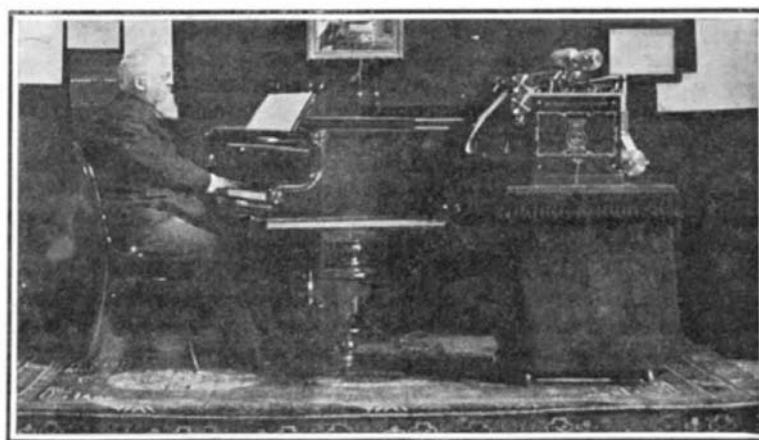
It is a popular and most erroneous notion, that hydrophobia appears in consequence of biting, and more rarely in consequence of licking surface wounds. There is also a third and easy mode of contamination—by scratching. Dr. Remlinger, of the Institute of Bacteriology, Constantinople, has just published several observations that indubitably establish the existence of such an origin of the hydrophobic infection. And this origin is easily explained. A certain number of animals (the dog and the cat in particular) have, in the normal state, a habit of licking their paws. Now, it has been proved that the saliva of rabid animals is virulent several days before the appearance of the first symptoms of hydrophobia. When the disease is declared, a new factor intervenes. The rabid animal scatters on the ground slaver that, especially if it be chained up or confined in a close place, soils its paws and its claws. On the other hand, the scratch lays bare numerous nervous fibers upon which the poison is very easily sown. Conclusion: Every person scratched by an animal rabid or suspected of being so should be inoculated by the Pasteur method with as little delay as possible.

The Aluminium Production of the World.

A report has recently been prepared by Mr. Guenther, American Consul-General, on the output of the various aluminium-producing works. The figures as given in the Chamber of Commerce Journal are as follows: The Aluminium Industry A.G., with works at Neuhausen, Switzerland, Land-Gastein, Austria, and Rheinfelden, produce 3,675 tons per annum. The British Aluminium Company has works at Foyers, Scotland, and also at Sarpfos, in Norway, and its total



Record Made by the Kromarograph.



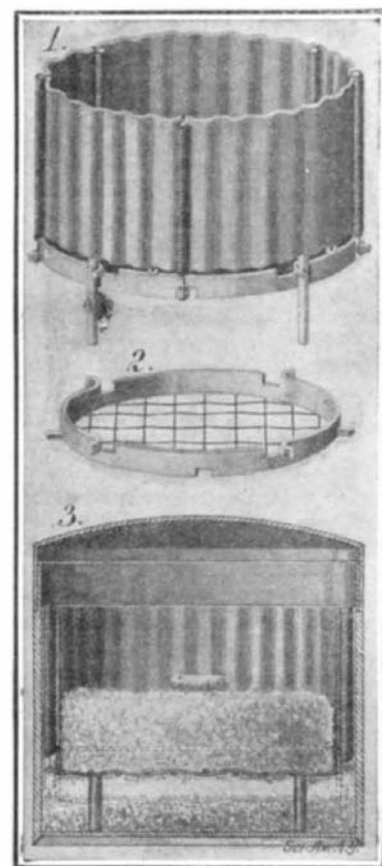
THE KROMAROGRAPH, AN AUTOMATIC DEVICE FOR THE RECORDING OF MUSICAL IMPROVISATIONS.

estimated annual output is 2,250. The Société Electro-Metallurgique Française produces 2,325 tons per year at its works at La Praz and Les Sordrettes. The other French company, the Société des Produits Chimiques d'Alois et de la Carmagne has works at Calypse and St. Felix, whose combined output for one year is given as 2,100 tons; but we understand that the French works were recently closed for some months owing to a strike. The Pittsburg Reduction Company, of Niagara Falls, Shavenigan, Canada, and Massena, is stated to have a combined output of 4,200 tons.

AN IMPROVED PUFF BOX.

Pictured in the accompanying engraving is an improved form of puff box designed with a view to overcoming the objectionable features of the ordinary puff box. In articles of this character as heretofore made,

the puffs normally rest in the powder, and are consequently liable to pick up an excessive amount. The new puff box, however, normally holds the puff out of contact with the powder, but in such a manner that the user may, at will, press the puff down sufficiently to take up only the desired amount of powder, thus preventing bringing too much powder to the face, and also avoiding waste or the musing of dressing gowns, dressing tables, and the like, by spilling the



AN IMPROVED PUFF BOX.

surplus powder. The construction of the improved box will be clearly understood by reference to the illustrations. It consists essentially of a ring-shaped cage (Fig. 1) and a puff rest (Fig. 2). These are assembled in a casing or box, as best shown by the section view (Fig. 3). The puff rest consists of a rim supporting a netting. The rim is adapted to fit against the bottom of the cage. The cage is preferably corrugated and several of the corrugations are utilized for housing spiral springs. The springs are secured at the top to the cage, while their lower ends are hooked to lugs on the puff rest. Secured to the cage are several vertical rods which extend below the bottom of the cage, serving as legs to space it from the bottom of the puff box. The puff rest is formed with guide arms which fit against these legs. The bottom of the box is filled with powder and the puff normally lies in the netting of the puff rest. In use the puff is pressed down more or less into the powder according to the amount desired to be taken up. The illustration shows the puff in its normal position, while in dotted lines its depressed position is indicated. It will be understood, of course, that the springs return the puff rest to its normal position as soon as it is released. If desired, any surplus powder may be removed from the puff by rubbing it against the corrugations of the cage. A patent on this improved puff box has recently been secured by Mr. Eugene A. Bagby, Waverley Hotel, Louisville, Ky.

In a paper read at the annual convention of the Canadian Electrical Association, H. W. Buck, chief engineer of the Canadian Niagara Power Company, has this to say about the insulators which are used at Niagara: The insulators are made of a compound known as electrose. This material is a very good insulator, is very strong mechanically, and is entirely free from cracks and other defects which are common in glass and porcelain. Similar insulators have been used on the Buffalo transmission lines of the Niagara Falls Power Company for the past three years, and they are the only insulators on those lines which have caused no trouble. It is impossible to shatter electrose insulators by stone throwing, and they will frequently turn a rifle bullet without being damaged seriously. The conductor used on this line is of aluminium of 500,000 C. M. in section and having thirty-seven strands.

The sections of the Shanghai-Nanking Railway to Su-chau and Wu-sieh, 91 miles, were officially opened on July 16, says the Times. It is hoped that the line will be completed to Nanking by the spring of 1908.