same time and in the same quantity, as in two pea-seeds grown under similar circumstances.

Similarity of growth may be partial; in two subjects the growth may be similar as to time, or quantity, or kind. When two processes of growth are different in kind, they may be similar in time; the growth of leaves and of underground tubers may occur at the same time, and this may be the only point of similarity between the two processes of growth. (Illustrative examples were given.)

In classifying facts concerning the processes of growth, according to such intrinsic attributes as are observable, our object is to seek the causation of the attributes observed. Having classed a number of facts as examples of unequal bilateral growth, we may seek to determine the causation of unequal bilateral growth. In pursuing such methods of inquiry, we follow methods similar to those which aided us in studying the motor functions of the brain. Thus we have lines of thought to guide observation. It is possible, and, I think, highly desirable, to arrange a museum in which specimens are classified according to the attributes of their growth and the forces that stimulated their growth and produced that special ratio of their attributes. It seems to me that this was in part the principle followed by John Hunter.

A catalogue was shown in which specimens were thus arranged.

The rules that should be followed in making analogies were pointed out. It was shown that we can only compare things or acts as to the characters or attributes which they possess in common; we may compare like functions as to their time and quantity; it is only as to the time of action that we can compare unlike functions; we do not directly compare the material things, but the attributes of their functions. Growth in a child and in a plant were then compared, and other examples were put forward.

In our desire to give some kind of explanation of facts in Nature, we used processes of analogy. Acceptance of the hypothesis of evolution encourages the study of analogies; our purpose in making analogies between processes of growth is to classify examples in the best manner for seeking their causation.

The term "reversion" is used to imply that the outcome of growth observed is similar in its intrinsic attributes to others that have previously been observed. The reversion is a repetition or reappearance of vital acts, similar in their intrinsic attributes and occurring in similar subjects.

The following proposition was enunciated as an epitome of the principles illustrated: "Every vital act, or act of growth, requires among its antecedents a supply of pabulum and stimulation by some force incident to the subject."

NOTE ON PIANISTS' CRAMP.

By WARRINGTON HAWARD, F.R.C.S.,

Surgeon to St. George's Hospital.

I HAVE read with much interest Dr. Vivian Poore's lecture in the JOURNAL of February 26th on certain conditions of the hand and arm which interfere with piano-playing. It seems to me that cases of functional failure in pianists have become much more common in recent years; and as it is convenient to have some name for the condition, probably that of "pianists' cramp," which has already been applied to it, is sufficiently characteristic, and has the advantage of suggesting its alliance with the well-known affection, "writers' cramp."

No doubt, as Dr. Poore says, failure in piano-playing "may depend upon a variety of causes," and he alludes to the effect of gouty, rheumatic, and other changes in the disabled members. But the condition for which the name of pianists' cramp may be used is quite peculiar, and is always the result of over-fatigue of the affected part. Of course, "over-fatigue" is a relative term. An amount of piano-playing that can be practised without harm by one pupil will over-fatigue another; and in the dyspeptic, anæmic, and ill-nourished the muscles will break down under less prolonged use than in the healthy. But in the majority of cases of failure of the muscles of piano-playing, which occur without obvious disease or injury, over-use of the muscles will be found to be the essential cause. A potent predisposing cause is very frequently to be found in the anæmia and general ill-nourishment of the body which result from too much confinement within doors, and the accompanying dyspepsia and lack of appetite; and this has, in several instances within my knowledge, been aggravated by the change in diet, climate, and other habits of life involved in leaving an English home for residence and study on the Continent.

My experience of these cases is much less than Dr. Poore's, and all that I have seen have been young people, during or just emerging

from the period of pupilage. In one rather severe case, accompanied by much muscular aching, the little and ring fingers of the left hand became, on any attempt to play, cold, benumbed, and purple; and these, I think, are the fingers specially liable to give way. I have recently seen an instance of a precisely similar condition affecting the little and ring-fingers of the right hand, with pain in the flexor muscles, in a rather delicate young lady given to much and rapid knitting.

Of the treatment of this condition, doubtless, as Dr. Poore points out, the most important part is rest and attention to the general nutrition of the body. Careful maintenance of the warmth of the affected limb (which is usually cold) has also seemed to me to be helpful; and I am sure that I have seen marked benefit from moderate and intelligently applied massage, even in cases where there has been nerve-tenderness; in two cases the pain always being relieved thereby. I think that, at least in some instances, the muscular tension involved in what Dr. Poore has well called the "steady-ing" of the limb for piano-playing, produces a considerable amount of venous congestion; and it is noticeable that long practising is apt to make the hands cold.

I am glad to see that Dr. Poore does not approve of the division of the fibrous bands which connect the extensor tendons of the ring-finger to the tendons on either side of it, which has been proposed as a means of giving greater freedom to the ring-finger of pianists. Can anyone suppose that the delicacy or power of touch of any of our great pianists would be improved by this absurd and unscientific proceeding?

TINNITUS AURIUM, AND ITS TREATMENT BY A NEW METHOD OF ALTERNATE INJECTION AND EVACUATION OF AIR.¹

By JOHN WARD COUSINS, M.D. LOND., F.R.C.S.,

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[Concluded from page 447.]

A FEW words now with reference to prognosis. It is not always an easy matter to express a confident opinion at once as to the complete or only partial restoration of the organ. In favourable cases the intensity of the aural symptoms often undergoes great variation from time to time. As a general rule, whenever the hearing power improves, the tinnitus is less disturbing; so that these symptoms appear to rise and fall alternately, and under very slight differences of tympanic pressure. Tinnitus, when dependent solely upon middle-ear disease, may be regarded as a curable disturbance; and, even in chronic cases, the relief obtained is often very considerable, and bears a direct relation to the amount of hearing power regained. On the other hand, the issue is always doubtful and unsatisfactory whenever there is repeated evidence of a deficiency in the cranial conduction of sound, especially when this loss of conducting power has been long associated with gradually increasing deafness and tinnitus. There is frequently, too, a marked relation between the degree of deafness, and the unvarying character of the aural confusion; and, in some cases of total and hopeless loss of hearing power, the persistent tinnitus forms the most distressing part of the disorder.

Let us now briefly consider the question of treatment. Many internal remedies have been recommended for this aural affection, but I have very little confidence in any of them, as in my hands they have done very little good, even when administered for a considerable period. The fact is, we know of no specific remedies for tinnitus aurium. The removal of this symptom wholly depends upon the successful treatment of the special morbid process by which it is excited. If we can succeed in curing the aural disease, and in restoring the integrity of the organ as a sound-receiving instrument, all the concomitant disorders will at once disappear.

With these preliminary remarks, I shall proceed at once to the treatment of tinnitus dependent upon disease of the middle ear; and this, permit me to remind you, is the special topic of my address. Theoretically, the treatment of this form of tinnitus is a very easy matter, and simply consists in promoting free and healthy communication between the tympanum and the pharynx, and so restoring the normal balance of pressure on both sides of the membrana tympani. If pent-up fluid exists in the cavity, it must be evacuated, and its mucous surface stimulated to healthy secretion. If chronic changes are present, producing collapse of the drum and immobility of the bony chain, our efforts must be directed to promote the normal elasticity of these parts, and, if possible, to re-establish their intrinsic

¹ Address delivered before the South-East Hants Medical Society.