**Medicine and Music – Tomira Zori**

(translated from the original Polish)

Apollo was the father of Aesculapius and at the same time the father of the Muses. However, it is not only in mythology that we find this close affinity between the healing of the body and the healing of the soul. In all epochs, music has played a role in the art of healing, and even in our times, music can be successfully used for specific healing purposes.

There are a large number of serious papers published in scientific medical journals discussing the importance of music for medicine. One of the most recent papers on the subject is an article by B. H. Larson in the Journal of the Michigan State Medical Society. On the basis of the close connection that links mental and physical phenomena, music, with such an outstanding influence on the psyche, might reasonably be expected to in this way, it could also have some effect on organic phenomena. Let us, for example, pay attention to the beneficial effect of music on man while eating. Music perfectly fills the void of conversation, drives away unpleasant thoughts and puts us in a certain cheerful state, which significantly increases appetite and facilitates digestion.

The oldest references to the healing properties of music are found in the Bible; King Saul was plagued by bouts of despondency, so distressing to both himself and those around him that they were even attributed to the influence of evil spirits. One day the king heard of a harper who was said to be able to drive away evil spirits by his miraculous playing, who was summoned to him. The musician, young David, played so beautifully that Saul regained his perfect mood, felt good, and the evil spirits left him.

The ancient Greeks were deeply convinced that music had a valuable healing effect. Democritus says that the sounds of the flute are a miracle cure for many diseases. Gellius Aulus, a well-known Roman writer, expresses this about the flute: There is a very widespread belief that the sufferings of a man afflicted with sciatica are greatly alleviated if someone plays a sweet and beautiful melody on the flute nearby.

 In the Middle Ages, the “dance frenzy” (chorea) raged in many European countries, known in Germany and France as the St. Vitus dance, and in Italy as tarantism. (This dance frenzy assumed, as a common psychosis, sometimes alarming proportions.\*) The public authorities believed that music was a specific remedy against the symptoms of this epidemic and surrounded the dancing crowd with musicians specially convened for this purpose. According to Dr. Hecker, thus the expected curative effect, and the circumstance that the sick, possessed by the frenzy of dancing, could not stand the false notes, this deserves special attention.

[\*) Below, according to Dr. Hecker: “Die Tanzwut eine Volkskrankheit im Mittelalter”, an excerpt from the description of this disease:

According to the description of an old chronicle, around 1237, about 100 children were seized by some madness, working in such a way that the sick set out from Erfurt and went dancing and jumping on their way to Arnstadt. Many of them died, others suffered from chronic tremor until death. A similar symptom was recorded in Utrecht, where about 200 people, dancing and singing in the same way, tried to cross the weak bridge over the Moselle despite the warning and found death by drowning in the river after its collapse… Such diseases began from then on appearing more and more often. In 1374 the streets of Aachen witnessed terrible scenes caused by a similar epidemic, and they saw whole ranks of men and women, afflicted with this unfortunate disease, dance for weeks, sometimes to the point of exhaustion, and in this dance they died. Their bodies swelled and distended like pumpkins, and only the forceful tightening of the kerchiefs brought some relief. The last stage brought spasmodic shaking of the whole organism. It was said that the unfortunate were possessed by the devil, and the sick explained that they were possessed by the devil. Unfortunately, these were just the beginning. This disease, which was called St. Vitus or St. Jana1) entire towns were infected. Hundreds of the sick appeared in Cologne, thousands in the streets of Mecu, and infected in some as yet unexplained way people working quietly, even the remotest corners. On this is the origin of the tarantella, the “slower spalatta” portion of which was specifically intended to prevent the outbreak of disease (tarantism).

At the sight of the sick, farmers left their plows, craftsmen, workshops, kitchen women and children and joined the dancing mob, and the whole west of Germany looked almost like one herd of dancing madmen who, to the general scandal, often committed highly scandalous immoral acts too. A certain Feliks Plater, from the 16th century, recalls that in his youth the authorities of the city of Basel ordered several strong men to dance with girls who were haunted by St. Vitus, which sometimes resulted in their complete recovery. There were cases when a girl possessed by this disease danced continuously for four weeks, pausing only in madness for brief moments for food or short sleep, during which the dance movements, however, did not cease. After four weeks, complete physical exhaustion set in, and the patient with injured and sore legs was transferred to the hospital, where after some time she lived to see a complete recovery. As an effective means, in some regions, the music of whole orchestras was used, which, playing for the sick to encourage dance, intensified the passion and led to ever faster and dizzying revolutions, thus hastening the complete end through recovery, and often death.”

1) because they appeared mostly in hot June days. St. Wit on June 15 st. Jan 24 June.]

 A well-known naturalist physician, Janbattista Porta, states in his work, *Magia Naturalis* from the 16th century, that he owes the excellent results of his method of treatment to the power of musical instruments specially constructed for his purposes. He claimed that musical instruments made of medicinal plants produce sounds endowed with the same healing properties that characterize the material from which they come.

 We will limit ourselves here to mentioning the importance of music among primitive peoples during the ceremonies of expelling evil spirits (healing from possession). In primitive peoples, music, religion and medicine are in a very close relationship.

 In 1878, performed at Randall’s Island Asylum in New York, there was a very interesting event. In the great hall of the institution, 1,400 sick women were gathered and treated by means of playing the piano [for them]. The result of this original therapy was generally successful. Under the influence of such repeated musical sessions, a significant improvement was found in a significant number of patients. All patients turned out to be particularly sensitive to rhythmic sounds; melodies without definite rhythm showed no marked effect, except in those cases where the power of association was intact.

 As to the tonic effect of rhythm, let us mention the effect upon a weary military column marching in the dust in hot weather, the sound of a drum, the shrill sounds of a military march, or the melody of a merry song; the unit forgets about fatigue, its strength increases, the soldiers are again ready for further marching effort or for battle.

 In 1892, Dr. Hunter of the hospital in Helensburg, Scotland, placed a piano in the infirmary. Dr. Hunter describes the results of listening to singing and piano playing by patients in the following words: “In several cases, the relief or at least alleviation of pain was very marked; in seven cases (out of ten) there was a decrease in fever.”

 Two other clinical observations are mentioned here. Russian doctor Dr. Bieszyński reported in 1896 about the successful results of the treatment of a case of night terror in a three-year-old child. After unsuccessful treatment attempts by all known means, the author decided to try music treatment and recommended the little patient’s mother to play a Chopin waltz in the evenings. The result was not long in coming and turned out to be very successful. After four nights the treatment was discontinued: the patient’s condition immediately worsened again. Mother resumed playing the piano; at first she played every night, then every other night, then every third night, until she stopped altogether. This time the result of the treatment turned out to be permanent, because there were no more recurrences.

 A French physician, Fournier-Percay, treated his son, who was suffering from constant pain and insomnia, by playing the flute. The result of this therapy was completely satisfactory.

 Everyone who visited military hospitals during and after the war surely noticed how much desire for entertainment music was in them. Music soothed suffering, gave new moral strength, revived hopes and stimulated the desire to recover. It was, in one word, an undoubtedly strong healing factor. Health resort doctors are well aware of the beneficial effect of concerts on patients. What is the positive effect of music?

 Dogiel performed a series of experiments on humans and animals in order to explain the influence of music on healthy individuals and came to the following conclusions:

 1. Music has an effect on the blood circulation in man and animals.

 2. Blood pressure goes up or down in some cases.

 3. Music generally makes the heart beat faster.

 4. The respiratory movements undergo mostly the same changes as the circulation; however, an independent influence was also observed.

 5. Changes in blood pressure depend on the pitch and intensity of tones.

These experiments were performed at the University of Kansas and published in the American Journal of Physiology. American and European physicians devoted much time and effort to this issue. We will quote here a few excerpts from the relevant works:

 *Pain is a special state of our senses, associated with unpleasant sensations; we refer to the occurrence of pain as a specific irritation of central or peripheral origin.*

 *Music is also a specific stimulation, of external origin, which reaches our senses in a different way and evokes impressions. These two different impressions, of course, cannot co-exist in our consciousness, and the one that gains the upper hand overwhelms the other. When the pleasant sensation becomes stronger, the pain subsides. Since the exact equivalent of two different sensations in our consciousness is generally impossible, music will not always be able to dull the sensation of pain. The same considerations also apply to insomnia, which depends on the constant irritation of the consciousness. Music, having an opposite effect on the respective centres, neutralizes the existing irritation and enables sleep to occur.*

It may be assumed that the human body has the properties of vibrations synchronous with the vibrations of music, just as it is in the world of inanimate matter. Certain states of mental agitation correspond to the high notes of the musical scale, and certain states of depression correspond to the low notes.

 The physical effect of music is explained by the influence that the brain exerts on the sympathetic nervous system, which governs the activity of all organs. This is how we can understand the influence of music on nutrition, digestion and restoring disturbed organic balance.

 We also note here that an American physician, Dr. Robert Schauffler, developed a whole musical pharmacopoeia, according to which each disease corresponds to a specific piece of music, intended for the treatment of this particular disease.

 If this idea seems ridiculous to us, let us not forget that music had many faithful supporters among the eminent physicians, not only passive but also active. Strümpell was a first-class pianist, Billroth played the violin wonderfully, Richard Morrison, the famous Boston physician, was a famous cellist, Ryszard Cabot, Professor of Internal Medicine at Harvard University, is an accomplished performer on the violin and in chamber music. One could mention here a long list of doctors who are also great supporters and performers of music. Billroth, the famous German surgeon and musicologist, wrote his reflections on music shortly before his death. In this work, which appeared only after his death, the author discusses in detail the influence of music from the point of view of physiology and psychology. Here’s what Billroth says about rhythm:

*Rhythmic movements represent an essential property of our body. Respiratory and heart movements are rhythmic; also our muscles can perform rhythmic movements with ease. It is very possible that all muscular movements, both voluntary and involuntary, result from the summation of numerous rhythms, very short and elusive. The precondition for the assimilation of music, which consists in a more or less developed awareness of the recognition of rhythmic movements, is probably an innate trait both in man and in some animals.*

 Three senses respond to rhythm: rhythm can be seen, it can be heard and it can be felt by touch. If these three modes of perception simultaneously respond to the phenomenon of rhythm, then the greater part of our nervous system is affected by it, which in turn must resonate throughout our system:

“Rhythm is life.”

 The future will show us to what extent music should enter the therapeutic arsenal of scientific medicine. There is no doubt, however, that both sick and healthy people will either enjoy the specific rhythm of contemporary music or the immortal melodies and wonderful harmony of the old masters: whether yesterday or today, it is always the lyre of Apollo, the father of Aesculapius, that sounds, sound waves that kill bacteria.

**The peculiar discovery of a Norwegian scientist.**

It has recently been reported in the world press that a Norwegian, Alfred Minsaas, has found that certain bacteria can be killed by certain specific sound vibrations. The Norwegian scientist is said to have managed to keep meat fresh for a longer time by means of sounds, because, as he claims, putrefactive bacteria die under the influence of tones. Due to the fact that this discovery could have far-reaching consequences, wide scientific circles became interested in it.

 Alfred Minsaas has been researching methods of preserving foodstuffs since 1912 and set himself the goal of his work to find a way to keep foodstuffs fresh for a long time. Minsaas claims to have arrived at his curious discovery by meditating on the “sacred baths” of the Hindus in the Ganges, which baths have a healing effect. There must be a great danger of infection for them, and since they are not susceptible to this infection, evidently the water must contain some germ-killing properties.

 Minsaas came to believe that the roar of the flowing masses of water gave the water its bacteria-killing properties. The Norwegian scientist therefore tried to copy the sounds of the strong fall of the waters on a kind of organ given to him by one of his admirers. Minsaas’s conjectures were confirmed by experiments carried out in America, which showed that sound vibrations of more than 80,000 per second kill not only bacteria but even fish. High sound vibrations also have an unpleasant effect on people.

 Conducting his interesting experiments, the Norwegian scientist was able to keep cut flowers, e.g. asters, fresh for 5 weeks with the help of sounds. According to Minsaas, people who have had any kind of organic disease feel unpleasant pains in the previously diseased place when exposed to certain sounds. The Norwegian scientist claims that sound vibrations are as necessary for the existence of every living creature as air, light and food. For example, if an animal were placed in a place where it lacked neither light nor air nor food, and the vibrations of sound were completely absent, the animal would die in a very short time.

 According to Minsaas, sound vibrations are harmful or useful, depending on their type and influx. There are no sound vibrations that would be meaningless. Minsaas considers the sounds of the city to be harmful to health, while the natural sound waves, produced by the rustling of wind in the trees, birds singing, the sound of falling rain, the murmur of a brook, etc., are salutary.

 In this statement one could find an explanation of the fact that staying in the countryside is very good for health and nerves for a permanent resident of the city. It is not only air and rest that do this miracle.

 Scholars who have hitherto studied Minsaas’s experiments are of the opinion that it might perhaps be the key to various ancient mysteries, and that therefore it should be of interest. The aim of future research and experiments is to investigate how vibrations, sounds that the human ear cannot hear affect the human body. The interesting theories of the Norwegian scientist, if thoroughly researched and confirmed, can undoubtedly have a serious impact not only on science, but also on practical life.