Diseases of the musical profession : a systematic presentation of their causes, symptoms and methods of treatment / by Kurt Singer ; translated from the German by Wladimir Lakond.

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DISEASES OF THE MUSICAL PROFESSION

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A Systematic Presentation Of Their Causes, Symptoms And Methods Of Treatment

By

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Translated from the German
By Wladimir Lakond

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To

MY CHILDREN

Margot, Anneliese, Hans Joachim

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TRANSLATOR'S PREFACE

To the majority of those interested either vocationally or avocationally in the arts or sciences, the subject treated in this volume will present a tremendous surprise, an immensely important educational revelation. But to the musician in particular, both the professional and the amateur, this revelation is of direct concern to his personality and work and is therefore a profound, even a vital, necessity. Within the knowledge or the ignorance of these facts is incorporated either the success or the failure of all his endeavors.

It is a commonplace that functional activities incident to most occupations, especially to those which require routine, tend to set up specific ailments. Yet it is a tragic and astounding acknowledgment that the practice of music, with its qualities of refinement and universal appeal, should also be included as a variation upon this gigantic world-theme of disease in work. One can perhaps state with impunity from future contradiction that all useful activities known to mankind have their complementary characteristic obstacles which may hinder achievement.

Now, to be conscious of the destructive overtones of disease in profession implies—and with great value to all who desire to prolong complete productive efficiency, mental as well as physical, as far into the future as is compatible with the laws of life—that there is greater possibility of preventing disturbances in work. Naturally this implication also applies to the practice of music. In-

deed the musical profession, from both the creative and the interpretive outlook, perhaps more than any other branch of work, can typify this very point patently and illuminatingly.

Music, in consequence of mechanical and electrical factors which have gradually but inevitably assumed cosmic range, is at last attaining its true proportions in cultured society as one of life's vital needs. Although the musician is occasionally tempted to forecast that in his art the impersonal mechanical product may supersede the personal producer, nevertheless one cannot disregard the fact that universal education in music is greatly furthered by this direct and powerful stimulant. Along with the greater development of musical endeavors, as with all endeavors, there arises the danger that a greater number will fall victims to disease in work. However, regardless of the course in musical practice, this fact will always endure—that ignorance of the perils latent in all work undoubtedly leads to failure and collapse. Ignorance, which is synonymous with retrogression, is therefore not the technique for realizing that elusive state known as bliss.

As pianist and teacher, I have personally witnessed only too often in the world of music the disastrous consequences of a proverb so generally accepted. Almost all of the musicians that I have met who suffered in their work interpreted their ailments from a purely physical viewpoint and were thus easily convinced that the foundations of their complaints were solely physical in origin. As a result, there were numerous instances of musicians so affected who felt that their situations were

hopeless, became discouraged and eventually were forced to abandon their professional activities. Unhappily this discouragement in some personalities even leads to more tragic and violent action—the abandonment of life itself.

Musicians are particularly fortunate that Dr. Kurt Singer, out of his profound erudition, vast experience and broad, sincere sympathy, has offered this work. The art of music has long been in dire want of such a book as this. Dr. Singer is peculiarly qualified to be the author of this volume since he is, at one and the same time, a musician and a man of medicine. In both fields he is a significant figure; in both he has achieved eminent recognition. Neither of his interests is hobby-esque. In this volume he has even extended the scope of the subject beyond matters purely musical; for much detailed and abundant information has been devoted to that other specific and commonly known affliction—writer's cramp.

Dr. Kurt Singer was born on October 11th, 1885, in Berent, West Prussia. He received his musical and medical education at Berlin, becoming in 1910 simultaneously a specialist in neurology and the music critic for the Berlin *Vorwärts*. His musical training was quite thorough and varied, including study under such men as Friedländer, Fleischer, Ochs, Grünberg and Wetzel. In 1913 Dr. Singer organized the Berlin Physicians' Chorus, which he conducts, presenting two or three concerts a year. Since 1923, when he was commissioned, he has been lecturing at the State Academic High School of Music in Berlin upon the diseases of professional musicians and the psychology of music. He was appointed

the assistant intendant of the Berlin Städtischen Oper in 1927 and three years later became its intendant.

Dr. Singer is also a prolific writer on musical and medical matters. His published works include: *Life of Wagner, Bruckner's Choral Music, Of the Essence of Music, The Healing Effects of Music* and numerous kindred volumes.

I have attempted wherever the possibility presented itself, without either modifying or changing the sense, to dispense with purely medical-psychological and musical terminology. At the same time, in harmony with the import and profundity of this work, I have also striven to acquaint the musician with the most prevalent terms in medicine and psychology and, in turn, the physician and psychologist with the most common terms in music.

To my sister Constance I offer my deep gratitude for her inestimable assistance.

WLADIMIR LAKOND

New York City

FOREWORD

In the autumn of 1923 I was commissioned by the Prussian minister of arts, sciences and education to deliver lectures at the State Academic High School of Music on "diseases of the musical profession" and on the boundaries of music and mental life. For years I had been making observations upon the foregoing disorders of professional musicians, and had pursued the study of the literature pertaining to the subject. Now, through regular consultation hours, I was given the opportunity to enlarge tremendously the research material—and also to sift it. Earlier theoretical conceptions were, through practice, realized, strengthened, modified. During the period of these years, the disturbances of professional activities—so far as I was able to observe them at the high school—had diminished to a minimum. By applying the process of elimination, during the lectures, upon the discussed physiological reactions to the brain, nerves and muscles, and by sifting the principal psychological problems—Physical-Mental, artistic Characterology, Memory and Fantasy, phrenological and evolutionary Theories, Doctrine of the Unconscious, etc.—I have in this volume assembled the most practical essentials; also, the causes, symptoms and curative methods of ailments, and their hygienic and educational preventives (prophylaxis).

So indeed, as the book will show, not even a single sentence has been uttered or taught. The contact with listeners hinders a quite rigid adherence to a systematic,

logical course; and in the sphere of artistic movements of expression, of the world of consciousness, of the mode of living, and of mental deficiencies among young artists, there are questions which ought to be discussed in detail between physician and patient, but not publicly in an auditorium. But my auditors and patients, through encouragement, objection, support, acceptance of my counsel, and confidence, were my teachers. That which I record herein is the product of years of observation, experience, practice and self-control. I hope that my text-book will become a blessing in the hands of physicians, pedagogues and active musicians, honest with themselves.

A part of the first and of the last chapter appeared in 1925 in the *Deutscher Musiker-Zeitung,* and a part of the chapter on "Nervousness" in my text-book on Neurological Diagnosis. (Published by Urban & Schwarzenberg.)

KURT SINGER

Berlin

DISEASES OF THE MUSICAL PROFESSION

CHAPTER I

PROFESSION AND DISEASE

General and Fundamental Considerations

PROFESSION and Disease—these two realms are ill suited to each other. In fact, just as disease endangers or prevents complete efficiency in every profession, so must the manner of living within a profession fundamentally eliminate sickness caused by occupational activities. Furthermore, we must demand that initial systematic effort, freely chosen work and regularity of physical and mental exertion should release, in progressive and ambitious individuals, life's actual values and fundamental meaning.

Indeed, in numberless instances men of science and of artistic achievement meet an early decline from the moment that, either voluntarily or involuntarily, they cease teaching or relinquish their tools. When one who has reached his sixtieth year abandons his profession, the abandonment is simultaneous with the waning of his vital forces. The body and the spirit, strongly bound together by internal parallelisms—indeed chained to and dependent on each other in functioning—need, in order to remain sound, a continuous incentive and unbroken stimulus, either from within or without.

There is no better invigorator for our organic system —there is no more balanced and hence no more rationally developing impetus to life's functions—and there

is no greater health-promoting factor for the mechanical being, as well as for the various scales of personal life in the individual (and *en masse*)—than work, than occupation. Upon the stagnation of regular cellular activity—whether it be in beast, man or nation—no organism advances to the highest possible degree of its development.

To deprive mankind of labor would have the same result on the individual as to deny food to the stomach, oxygen to the lungs or exercise to the muscles. Shriveling, atrophy, degeneration and withering are the local consequences; the general ones are the loss of energy, the absence of life-spirit and of body tonus (physical tension), the numbing of ambition, interests and products of will-power, and the precipitation of the organism from the heights of individually conceived living to the depths of mere existence.

To prevent all this is the work of Work. Or rather: Disease and Profession would be dissociated terms if every person could prescribe and select his own routine of work to harmonize with his entire constitution.

This harmony is constantly becoming less common as external causes, social, political and communal, instead of an inner inclination, have the deciding influence in the matter of choosing one's vocation. The chance for gain, considerations of favorable circumstances and the proportion between supply and demand must always regulate the number in professional fields. And never at any given moment in this wealth-chasing world can we avoid a situation where those who are talented and suited for a certain calling are perforce

obliged to remain in the background, because actual need drives them from their life-course; while because of fashion, convenience and social dictates the untalented and unfit, who are not hampered by considerations of money and the possibility of quick returns, are able to fulfil their aims, as well as to carry out superficial desires, play-tendencies and pseudo-artistic impulses. A higher cultivation of a particular profession happens rarely; and the struggle for existence surely brings about the fall of persons who, according to the law of natural selection, would be destiny's first chosen.

We must tolerate all this until the state itself completely clears the path for the capable ones, draws the worthy element for its own advantage and gain, leaves the mediocre to itself and rejects the inferior. The results of psycho-technique, the selection of the talented ones in school, the possibility of enabling those without means to study—all these advances also will some day counteract the overflow of professional activity and will permit the unhampered ripening of developing individuals to the highest standards humanly attainable.

Theoretically one could suppose that decided vocational inclinations are always associated with the organic, physical and nervous structure necessary for a certain profession and with a correspondingly adequate general intelligence and special talent. Otherwise, an urge toward a profession, striving to conquer even formidable obstacles, would be less frequently so elementally successful as we often perceive, particularly in artistic natures.

At least, one may believe that the body seeks some

work in a sphere pleasant to itself—at least that it seeks no work opposed to its health. One may also believe that, in an intellectual and artistic life, a specific and decidedly great number of psychical elements (such as imaginative life, the sensory world, fantasy and temperament) will influence the choice of profession. Accordingly the ideal choice of a vocation really ought to be based on a foundation of work-dietetics which are sound, aspiring and beneficial to body and soul; an injury from labor should be impossible.

Up to a certain degree these considerations are known of course by every educator and work-seeker; in fact, every one acts in this matter according to certain unchangeable laws of his nature and of his biological make-up. A consumptive will not employ his energy in a mine-shaft, nor will a person suffering from obesity endeavor to be a jockey; and a smith without powerful biceps or a wrestler with muscular atrophy is just as unbelievable as an engineer without constructive ability, a pedagogue with a choleric temper, a naturally feeble-minded philosopher, a stammering orator, or a musician without a sense and talent for form, measure and rhythm.

All this may be exaggeration. But there is significance in the simple circumstance that on the average the constitution, intellectual as well as physical, must be and must remain the most important factor of preparation in the choice of any profession.

Now, to be sure, not every person chooses his calling himself. The parental vocation is usually the standard —especially since study is combined with expenditures

which students can neither foresee nor meet. Tendency and talent—especially for artistic and musical work, in contrast to the other professional branches—are clearly asserted in even immature individuals. How effectively the promise, frequently synonymous with talent, is fulfilled, often really depends upon the artistically inclined youth.

Here is the fundamental difference between work for profit as distinguished from those forms of artistic accomplishment that—ethically viewed—should not be intended for occupational and living purposes: With the earliest revelation of musical talents, the physical aptitude is hardly ever taken into consideration. The scientific observer frequently sees, in the lives of our great musicians, distinguished talent (or genius) united with physical weakness. Composers of genius who are of athletic physique—such a combination is hardly imaginable. One assumes that an asset which is an overdevelopment, as a rare musical talent is, would be balanced by a bodily underdevelopment. To be sure, this applies only to geniuses, and not to folk of average talents.

For these (that is, the greater part of all those who either create or interpret music) the choice of their life-work comes at the most important age, biologically, which is also to be reached with the critical change in women. It is the time just before completing the age of puberty. The sexual crisis of this period most radically influences the physical and mental development of people. The endocrinal (internal-gland) processes, which are connected not only with the sexual organs but also

with all the glands of inner secretion (pineal, thyroid, suprarenal glands), at this time plant the seeds of the actual characterological nature of the individual, of his mental life, his impulses, desires and passions.

Between the ages of thirteen and twenty, there occurs the awakening of all inhibitions which are to make a person socially useful and which offer to reciprocate the accumulation of stimulants in the growing brain. During the age of puberty there are often revealed, for the first time, the formerly latent predispositions to nervous and mental diseases.

Now follows the intellectual expansion of the range of vision and of the outlook on life; the moral and ethical bulwarks of the entire being are to be built; at this time, also, are finally laid the healthy or the diseased foundations for propagation. An enormous revolution—the greatest a single individual experiences —takes place, and the prediction of a higher development or of a decline after an apparent success is extraordinarily difficult.

And during this period of heightened emotional reactions, of intensified feelings, of exaggerated fantasy and of most magnified, completely unredeemed eroticism—at this time when even the Unburdened are deceived by "sky-high" exultation as often as they are "mortally grief-stricken"—at this time of tumult, of complete change of blood and lymph streams, and of mental germinations—an inner force drives the youthful toward some achievement which shall wholly capture all the powers of the senses, nerves and body. One has only to contemplate the revolutionary transforma-

tion during the years of puberty; indeed, one must exaggerate it in order merely to understand the tremendous strain which adds to the external demands of one's calling the entire gravity of a most significant endogenous formation.

Puberty as a danger zone has been well described by Bobertag in the *Zeitschrift für Psychologie* (1920—No. 1). It is the period of transformation and discord, of increased fatigue and irritability, of psychical fluctuations, of tendencies to exhilaration and overestimation —it is the time of dissension between "wanting" and "being able," intensified by the change of *milieu* (transition into the profession). The child is receptive (imitative); the adult works with independent, abstract ideas, is productive, creative and has his own sensations and thoughts. The fantasy of puberty creates attainable and unattainable ideals (castles-in-the-air) which pilot the course of one's ambitions. A tendency to solitude, reserve and *Weltschmerz* [1] impels one toward artistic discharge (production)—or at least to the hope of becoming an artist, an actor or a musician.

The naïveté of the child and his lack of self-consciousness are lost before the harmony, reality and experience of the adult can be acquired. The overrating of physical and mental powers leads to the false staking of energy, to the conflict between exuberance and rejection, between self-reliance and social cowardice, between recklessness and sentimentality. In boys the impulse toward liberty and self-respect develops more

[1] *Translator's note: Weltschmerz* (the literal translation of which is world-pain) may be interpreted as the feeling of sentimental, pessimistic weariness with the world.

strongly; in girls, the emphasis is on the faculty for absorbing and the instinct of subjectivity; in both sexes sentimentality and sensitiveness increase.

In extreme instances these new mental strains lead to moodiness, discouragement, tendency toward dependence, remoteness, fanaticism and flirtatiousness. Love of music, pleasure found in the activities of famous virtuosi, the yearning for fame and appeasing of ambition, the awakening of early talent for some instrument, secret devotion and premature susceptibility to poorly concealed eroticism in song and in music—all these are the joys and the perils which face puberty, which befall puberty.

If music is the outlet of erotic emotions, and if erotic tension can thus become a splendid "sexual equivalent" (substitute), then this period of maturing leads to an evolutionary crisis even more in musicians than in persons without the erotic forces of this work. Between the years of fourteen and eighteen, the mental and artistic precocity is determined; and the sexual adjustment to life, most instinctive and most radical of all sensations, is decided. Also, during adolescence, the Erotic, along with the Characterological and with the normal or abnormal sexual feelings, beat fatefully upon the portals of the Soul, already opened to the World and to Art.

School binds the Teacher to the Taught, and also the students mutually in a community—which is not always beneficial to impulsive activity. On the other hand, no one will consider as dangerous the "flapper's" enthusiasm for her adviser or the young man's for his teacher. This seems to go with the excitement of edu-

cation. Danger first arises when a mature person, through special ability, can develop the dormant, subordinate feelings of an adolescent pupil into permanent ones.

The age of puberty, indeed—as Spranger declares—is also dependent, during the course of its progress, upon environment. It is affected differently by the country and the city, by plebeian and bourgeois society, or by commercial and artistic surroundings. In all its phases and tendencies it is part of the entire mental structure which, significantly and inevitably, is developed. The sexual instinct in this period is perhaps not nearly so dominant as is commonly supposed; what seems to be more important in artistic existence is the transition into ego-consciousness, and into the knowledge of the inner being. Puberty is the age of the awakened person's intensification; he can be either injured or benefited by society, teachers, friendships, understanding, attachments and aversions.

At the same time, youth endeavors to comprehend the universe, not with judgment ripened by experience —for where would youth acquire this, except from the experience of others, or from the hidden treasures of inherited germ-cells?—but with fantasy. The fantasy of either a poet or musician. In the process of selecting a career—poet, actor, composer, virtuoso or statesman—the maturing person seeks to discover himself, not without crass vacillations and deviations from the proper course. Sexual desires isolate themselves from the erotic ideal; inclination to cultural directions becomes dulled and intimidated, or strengthened and ennobled.

The pedagogue should acquaint himself with this significantly expanding mystery of puberty; he should anticipate, if not understand it. For with him lies the responsibility of indicating the correct course in fulfilling the great yearning for usefulness in life.

To the physical crisis during puberty is added the mental one; and to the mental, the social. It is in just such a state of turmoil that a perfect adjustment between body and spirit, between physique and intellect, would be desirable—when the restless activity of the will-power, the struggle for or against, completely shocks an existence in its first disturbance.

But, precisely at this time, Nature denies us a deeper insight. The somatic-psychic (physical-mental) prognosis (forecast) is correct as seldom as the forecast whether a wonder-childhood will progress in a direct line from a manifestation of the play instinct to mature artistry. Counsel and admonition would no doubt be totally futile when talent rushes precipitately toward its destination. We know that ties are severed, parental homes forsaken and years of misery endured—we know that there is no bridle for born talent and genius. Even social ostracism and the certainty of hardships do not curb the chosen ones in pursuing their "lucky stars." And it is well that this is so.

Critical judgment can first become fruitful when the measure of talent in a young person is not abnormal. The person of average talent does not exhaust himself; he knows how to preserve his physical comfort; particularly so in the struggle for success and artistic expression.

In highly gifted musicians, talent conquers physical defects. *In such cases the profession can become a menace to the constitution, since the constitution was not considered in choosing a profession.* Now, before anything else, medical and pedagogical protection should be summoned, since now a treasure for all civilization is to be saved. But because our powers of understanding are not always expansive enough to record the agitation of puberty as a thing of real value and as a transformation to a great future—and because, on the other hand, we ought to separate the odd person from the genius and the bizarre individual from the creative type—there now remains to us, in every single instance of professional disorders, the medical obligation of restoring strength and preventing relapses.

Musical talent in its average form and magnitude is quite common. For no other special activity, for no other profession—even though it also is artistic—is there so much inclination and aptitude. Therefore we are prepared to encounter an unusually large number among musical devotees, creators and interpreters, in whom the balance between energy-absorption and energy-production is disturbed. Whether this disturbance involves the entire constitution or more particularly individual organs depends upon the nature of the special work, upon the intensity of absorption of certain organ-groups, upon the speed and perseverance of study, upon the method according to which the hands perform their holding and stroking movements, upon the adjustment of the body to the work demanded, and recently upon the enormous number of physical

and mental preliminary conditions—above which the struggle for existence arises as the most powerful court of judgment, as the breeding-place of conflicts which are waged in a nervous organism.

The demands which the musician's career already places upon the student and scholar are enormously great—often much greater than those encountered in the practice of the profession itself. Therefore the tendency toward occupational disorders will have already appeared during the years of ripening, and will not be delayed until maturity. In a case of chronic financial set-backs caused by professional obstacles, the virtuoso, violinist or pianist would be lost even before the natural termination of his public appearances. Hence one finds these afflictions less often in general activity (vocal diseases excepted), than in conservatories.

The better the school and its pedagogical methods, the rarer is professional disease. To-day it is required, and rightly, that the teacher of young music students be well informed in the physiological fundamentals of his special vocation, and that he impart this knowledge to his pupils. Then derangements of the muscular apparatus and of peripheral nerves are often, if not always, avoided.

But, to be sure, a person performs not only with his arms and legs, with the throat and fingers; in the musician, the entire being participates—the physical and the spiritual. This continuous overtaxation must find some compensation. The dietetics of work, the complete preservation of health and the careful distribution

of work and rest intervals will, at this time, have a soothing and curative effect.

The manual and other physical requirements which burden studying musicians are, in fact, extraordinarily large in comparison with other branches of work. First of all, throughout the entire duration of the study course, theoretical and practical exercising are closely associated. Neither intellect, body, emotion nor temperament may be permitted to remain inactive.

A lawyer studies his pandects and paragraphs and the technique of court work without active participation in the practice of court procedure. A medical student attends the anatomy course, listens to lectures and receives instruction at the sick-bed; but, independently, he neither examines, treats nor prescribes by the acquired methods. On the other hand, the musician studies technique and applies it immediately; he is taught counterpoint and at once utilizes the theoretical knowledge in imitative exercises; he is simultaneously a student and a creator, a theorist and a practitioner; with the enlargement of material control, his inclination and his ability for independent production also grow. While studying, he is already working under his own responsibility. He senses stagnation (a rut), reaction and progress more intensely than people in other professions. Also—even if he were highly deluded—his ear and the limits of his technical skill, his constant readiness for comparison, which indeed he cannot escape in our concert-life, must make him self-critical. The musician is already creating even while he studies; he is endlessly studying further even while he creates.

In other professions the members learn from the writings, the creations, the knowledge and the achievements of others. However, only by himself can the musician recognize the pace toward perfection, can take the steps from pupil to associate to master, and can judge his own accomplishments.

To attain such understanding requires self-conquest, requires the yielding of much self-satisfaction and vanity. Not always does this happen without paying the cost in mental attitude and nervous power. It is now the concern of the physician and the pedagogue to deal in various ways with disheartened disillusionment and with unbeneficial Narcissism (self-admiration), to clear the path according to the measure of talent but not to block it through personal over-demands. But also where claims and compliances, correctly distributed according to individual constitution, talent and ultimate aim, are self-evident to a psychologically thinking teacher, there too disturbances through work are not always avoidable.

In order that technique be fluent, brilliant, sure, eloquent and fraught with expression; in order that technique be a medium for artistic composition and not the final goal of study, it is essential that the musician show an endurance extending over years of systematic and persevering practice. Even those highly developed in technique may not escape practicing. For practice is a part of our memory; it is necessary to engrave the convenient and inconvenient nerve-tracks on the brain. Muscular innervation of the larynx, contraction and relaxation of sinews, rigidity and loosening of joints,

economy of inspiration, balance between chest and abdomen respiration, abnormally irregular, quick action, physically unusual finger positions, coöperation or opposition between left and right—all such or similar processes are not situated, already preformed and prepared, in our cerebral nerve-tracks. Rather, the development of such processes demands a clearing and a grinding-in of cellular fiber groups, so that a difficult action becomes facile and an awkward one, convenient and natural. Already our one-sided—right-sided—dexterity hinders us in becoming technically as proficient with the left hand as with the right. Situations such as the thumb position in the cello, the spring-stroke in the violin, passages for the left hand with pianists, or with singers the transition from the chest to the head registers —all these, no doubt, are in preparation within our organisms but not completely cultivated for independence.

Those movements of muscles, joints and sinews with which Nature has endowed us—that is, all those which are part of life's essentials, such as seizing, snatching, grasping, defending—are acquired without practice. Not so, however, with the progress of every smallest function of a local organ from physiological capacity to artistic expertness. Diverse are these new demands on the motive apparatus; diverse are the possibilities of undertaking, without suffering harm, the training of the motion-mechanisms; diverse therefore are the talents for extraordinary technique; and diverse are the functional disorders caused by overexertion.

That which is for one person a normal amount of

technical practice, remains for another an overtaxation. This variation does not always depend upon the external health of the constitution. We know corpulent, stout, fleshy violinists to whom eight hours of practicing causes no complaint; others, similarly built, whose arms refuse to work after one hour. We know graceful, slender, sinewy female pianists who can play runs systematically the whole day through, and others, no less supple and athletically trained, who, after two hours of playing, are exhausted and feel pains. The entire organism and that part which is essential for practicing by no means need be parallel in their working capacity.

And generally speaking it is just as useless to reject the idea of becoming stronger or stouter, as the contrary. In many observations and examinations I have never been able to establish the difference in the frequency of writer's cramp (a special professional ailment also peculiar to music copyists and composers) in relation to the stoutness or leanness, strength or weakness, of the person concerned. To the physically unfit there come more easily a greater elasticity and energy in the overcoming of physical-technical difficulties.

Doubtless the muscle is far from being easily fatigued. In it nutritive material is transformed into energy, heat, work and accomplishment. In its functions the deficiency of power-supply, the misuse of strength-economy, the postponement of the internal law of absorbing and releasing chemical energy, must at the earliest be compensated. Oxidized, nutritive material creates, in nerves and muscles, working power, trans-

planted energy, corresponding to the combustion energy in the assimilation of matter. In the amount of oxygen consumed may be measured the amount of energy. Exertion, fatigue, tension, relaxation and recovery—all these symptoms of continuous physical-chemical work are accompanied by muscular activity.

The examinations of Schroetter (to which Julius Flesch refers in his book on the professional diseases of musicians) here lead from supposition to scientific proof. He examines energy-consumption and working efficiency during singing and instrumental performance. It appears that the additional expenditure of calories during piano-playing is about 180 per hour; that a violinist uses 400 cubic centimeters of oxygen more per minute during the rendition of an average concert composition; and that a singer produces in his professional work a 50-percent increase of energy in chest activity.

Similar increases of energy were calculated by Tiegerstaedt and Olin (see Flesch) while studying the release of carbonic acid; in horn players, around 70 to 90 percent; in violinists, about 160 percent; in clarinet players, about 111 percent; in kettle-drummers, about 275 percent. The average expenditure of energy, in a pianist, chemically determined, corresponds to the average like expenditure in physically hard-working people. It is clear that from these (not yet definite) medical-prophylactic experiments, some day there will be derived a specific calculation of nourishment requirements.

In the mean time, Schroetter and Loewy have continued these studies in detail and have also computed

the consumption of energy in conductors (published by J. Springer). In these instances, rises up to 120 percent were found, figures which were surpassed only during the performance of very difficult piano works, during contrabass passages and during the use of percussive instruments.

Past a certain limit of continued exertion, the muscle now refuses; it resists new contractions and constant approaches to its extreme points of reserve strength—particularly when through uneconomical practice oxygen is wasted. A paralyzed sensation, frequently felt as heaviness or as pains of strain, is sometimes Nature's means of protection—that is, a physiological action to prevent further demands. That part of the ego which is concentrated in the limb exerted in the arbitrarily moved organism, revolts.

In the muscle we can easily discern the manifestations of active and inactive tissues, of the effect on limb-movement, of the contractions of muscular fiber and of altered temperature. In the nerves we observe nothing. No motion, no change in temperature—also nothing microscopically. There is merely the electrical tension in those parts which are affected—that is, which are active; a different one, in unaffected and inactive parts. But we can hardly err in the assumption that in every, even very small, activity of nerve and muscle, processes of assimilation are in play; that all work has physical and chemical consequences; that, in every second of endeavor, there results the loss of matter.

Theoretically, it would even be possible that this loss of albumin and the accumulation of fatigue-substance

(lactic acid) already signify a poisoning (intoxication) which plainly represents the condition of fatigue. We must also believe firmly in this chemical change without microscopic laboratory proof. For it is a naturally scientific, and according to the law of energy-preservation a self-evident, claim that an active constitution stores and releases power in a different manner from that of one in repose.

In agreement with anatomical knowledge and physiological conceptions of other diseases of the nervous system, we are even forced to assume that at no time does an irritation or a paralytic condition in the peripheral areas remain peripherally localized. Rather it radiates backward in the central section of the spinal cord—consequently, in the cells of the posterior and anterior cornua, which are to be viewed as the source of nourishment for the peripheral nerves.

This process is not to be conceived or proved anatomically as an organic change; rather, we must suppose that a constant nutritive stream is flowing from the center to the periphery, and that now there occurs an uninterrupted exchange of power, irritation and matter. Therefore, if a nerve or a muscle becomes sick, perhaps in the manner of an inflammation, the condition of pathological (diseased) irritation and debility reacts upon the spinal cord, and from here irritation impulses again radiate back to the periphery.

But the structure of the spinal cord is so equipped that here, in a narrow cross-section, the refractions of a great many nerves and muscles—not just individual ones —meet. Therefore, more centrifugal (from center to

periphery) irritation currents are liberated than centripetal (from the periphery to center) ones are absorbed; that is to say, pains and weak conditions can trespass upon neighboring, quite healthy territory—irradiating pains. Sometimes they appear only in a supersensitiveness (hyperesthesia) of the skin, which, in a general sense, is excited by the laws, not of the peripheral but of the central innervations. But also, occasionally, in the invasion of the pains and symptoms of fatigue into other muscular groups.

To be sure, this happens frequently due also to the fact that in the stalling of individual muscles, other active substitutes come to the rescue—muscles which have similar or equal functions, but which, with pain, respond quickly to unaccustomed requirements. Thus, it occurs that when a vibrating finger in a violinist is painful, the upper arm, in order to bring relief, is also vibrated. The result is an excessive contraction of the biceps (forearm flexor) and pain in the strained muscle. Similarly, shoulder muscles are incorrectly employed in the place of balking arm muscles.

According to the classic researches of Mosso, one can tire a muscle by peripheral electrical irritation. But this physical signification of fatigue is not the only one we know, even if it is the sole one which we are able to measure accurately. To this is added a psychical fact which is often essentially stronger, at least as a provision for becoming conscious of weariness. From the brain, as the seat of all our sensibilities, the feeling of tiredness is projected to the muscles, from which this feeling seems to emanate.

Thus, the violinist or the pianist feels his hands becoming powerless, and the singer, his larynx muscles; one has pains in the arms, the other in the side of the throat. These complaints of pain are often nothing but reluctance toward the feeling of fatigue itself. Involuntary, automatically functioning muscles do not tire, or only when we artificially cause them to function arbitrarily (blinking or breathing musculature). In the normal physical capacity, the absorption and consumption of energy and strength remain exactly in correct balance.

Also, the tone production in the larynx—according to the investigations of Avellis, Taylor, Stern and others—is an unconscious process, unknown to the singer. He can influence only a tone already cultivated. He can correct it, and the method of this correction is right, the vocal apparatus functions well only, "when its activity is guided by the principle of the smallest amount of power." Precisely so it is in all other artistic, manual skill. In tone-cultivation, in the achievement of the highest attainable ideal, a minimum amount of force must be used. That is the purpose of every good, every physiological "method."

When this ideal of strength-economy is reached, there is no fatigue, there are no feelings of dislike in the peripheral organs—then also there are no diseases of profession. The ideal coördination of muscles in artistic work even causes also an inner feeling of pleasure, a comfortable, liberated frame of mind that is precisely the antithesis to the "dislike" components of fatigue. It is only when the ideal measure of power is exceeded

that there comes a sensation and a consciousness of the consumed expenditure of strength, that there comes pain. The healthy, good player or singer notes nothing of his physical performance; when first he feels the effort while playing or singing, feels that exertion is necessary in order to attain the same high quality as before—then there is revealed the first tendency toward fatigue, toward exhaustion and toward diseases of profession.

Since neither motion nor sensation takes place without the participation of definite sections of the cerebral cortex, so likewise must every disorder in the peripheral nerve and muscular apparatus irritate (influence) reversely the brain functions. With the extraordinary wealth of cells and fibers, as well as with the extremely developed possibility of averting and diverting cerebrally (mentally) associative conditions of irritation, such a disorder hardly comes to our consciousness. But that in chronic conditions of external diseases the entire cerebral cortex may also be functionally injured is a fact which we perceive in the frequent neuroses, general states of exhaustion and debility of the nervous system, when they often appear as neurasthenia along with professional disorders of a local nature.

A case of Weddy-Poenicke's may here be cited. A professional singer burned his back superficially by carelessly leaning against a stove. As a result of this light injury, there developed an insensibility toward stings and temperature in the extension of the central section of the spinal cord, which is particularly important for his professional work: in the region of the

diaphragm and abdominal musculature. Since there were no indications of an organic nervous disease (syringomyelia), one may really interpret the symptoms as local hysteria.

As a check against disturbances of the motion-apparatus and against the appearance of pains, the increased internal participation and interest can be valuable. A conductor can lead a composition for two hours without feeling any fatigue. His enthusiasm prevents his physical reluctance. Were he to beat time without the orchestra, lifelessly, without any connection with music, people and instruments, then he would slacken after ten minutes. So can also be explained the fact that the scholar who writes a work of several volumes or the composer of a weighty four-act opera more rarely has writer's cramp than the stenographer to whom work is dictated—therefore the intellectually interested, original writer more seldom than the mechanical. This is also true of the strange and fortunate phenomenon of the connection between body and mind, of psycho-physical parallelism.

When, through any work, matter is reduced and fatigue-substance is released, then rest must come as the substitute, as the compensation, for work. Only during a short period can the feeling of tiredness be compensated (balanced) through will-power, concentration and interest. But one who is tired and rests himself is able again to impose fresh burdens on his motion-apparatus. And the duration of proper functioning is then—provided the circumstances are normal—far greater than the rest period was.

Rest belongs to the dietetics of work and to the essence of profession. No instructor, no pupil, can overlook this law. The utilization of the least possible amount of strength in attaining the highest possible effect—this individually graded Taylor system must have its place in every artistically planned structure.

Various experimental investigations of a psychological nature were made—for example, by Kräpelin and Graf —in the work-curve and the relation between work and the interruption of work. According to Kräpelin, the effect of fatigue sometimes disappears very quickly, sometimes continues for a long time, and frequently is not obliterated even through sleep. Physiologically he assumes the accumulation of fatigue-matter and therefore interprets tiredness as a paralyzation caused by a chemically decayed substance. The reënforcement of strength supply in the brain proceeds more slowly than its consumption. The peak of achievement can be stimulated; it declines through injury to tissues and wear-and-tear.

Herewith are connected the numerous daily vacillations. The impetus for work, as well as emotional states and the interpolation of rest intervals, are not without influence upon muscular strength, or upon the weakening of powers. The joy in work is an essential central motive for the procedure of work, endangered by mental influences. The decrease of production corresponds approximately to the measure of the rest-effect.

Graf has subjected the effects of rest during working periods to a special experimental-psychological examination. The increased mental production grew with the

length of rest and was more sharply stressed in short rests. A two-minute rest period seemed to be most beneficial; that of five minutes not so good. Now, feelings of reluctance and the lack of stimulation appear as obstacles. The gain from most profitable pauses amounts perhaps to 3.3 percent of the working time. The most favorable occasion for resting is after eighty to ninety minutes. The effects felt from rest, which is really essential for good quick progress in work, come in the second third of work; in any case, the final results of continuous work without pause are bad.

Graf has also studied through experiments the most advantageous time for two pauses introduced during a working period of two hours' duration. In order to test these further effects of rest, Kräpelin's statistics were used. The results are important to us, because a two-hour period of continued practice—perhaps two or three times a day—is really a certain standard for the musician. Arranged in tabular form, the following outline was submitted. In the first four columns the figures indicate minutes; in the last two, they indicate percent:

FIRST PAUSE		SECOND PAUSE			
Position After	Duration	Position After	Duration	Percent of Loss in Working Time During Pause	Percent of Net Gain in Working Time
40	1	60	1	1.64	1.41
40	1	90	1	1.64	2.76
40	1	100	1	1.64	.04
20	1	80	1	1.64	2.35
40	1	80	1	1.64	2.94
60	1	80	1	1.64	1.08
40	1	80	1	1.64	.82
40	1	80	2	2.44	1.76

FIRST PAUSE		SECOND PAUSE			
Position After	Duration	Position After	Duration	Percent of Loss in Working Time During Pause	Percent of Net Gain in Working Time
40	1	80	4	4.00	3.34
40	1	80	9	7.69	1.22
40	1	80	5	4.76	1.80
40	2	80	4	4.76	5.14
40	3	80	3	4.76	3.11

It appears from this that a pause of two minutes after the first forty minutes of practice and a pause of four minutes after eighty minutes of work give the most profitable and advantageous results to the worker. This is a rule which, in general, can be absolutely recommended only with individual reservations. Practical knowledge has confirmed this for me.

As for the rest, Graf rightly emphasizes that the favorable effect of the pause is experienced not only after its occurrence (recovery co-factor), but that it is already felt even before its beginning (anticipation co-factor). This is verified also by every one who makes this practice experiment upon himself. The optimum of net gain in work is derived neither from too brief pauses, in which the effects of sensations, recovery and relaxation are trivial, nor from too lengthy pauses, in which the overproduction that follows becomes insignificant through the great loss of time. In fact, a maximum of production should be realized through a minimum of work interruption.

It is yet to be noted that a complaint, an irritation or a resulting symptom must not, *a priori,* necessarily be a professional disorder, because of its appearance within

the profession. It is possible that professional activity first discloses a previously existing disease, and the increased demands upon the sense organs and the motive mechanisms drive germs and tendencies toward disease into the first superficial light of observation.

To cite a practical instance: If a nineteen-year-old female violinist, who practices five hours daily and often plays from two to three hours with an orchestra, feels fatigue symptoms in the eyes and headaches, which disappear when proper glasses are worn, then the nearsightedness and astigmatic headaches are not caused, but are revealed, by her professional work. Likewise in the case of a nervous ear trouble which was first discerned when a female singer was repeatedly unable to hear distinctly an accompanying instrument at her left.

An injury to the hearing caused by otitis media (middle-ear inflammation) is naturally a more serious hindrance to the occupational activity of a musician than to the cobbler; but this certainly does not make it an occupational disease. The same is true of the supersensitivity of the ear nerves, the irritation of which produces simultaneous color-sensations of a specific nature, or of skin pains, or of disagreeable feelings in certain organs. Color-hearing, the so-called acoustic-optical synesthesia, is an intensified reaction, occasionally diseased, but which befalls the layman as well as the musician.

Consequently derangements of musical memory, which can be so ruinous to the virtuoso, do not belong to our investigations; indeed, we know that age, that a brain abscess in a certain section and that psychoses

(mental diseases) prevent the normal termination of irritation and reaction, and the physiological coöperation of many nerve tracts (associative). But these disorders are by no means peculiar to the musician; they attack him precisely as they attack any other professional, only more strongly in a social sense.

We shall also eliminate from our consideration diseases of the eyes, the heart and the lungs, in so far as they do not occur directly because of professional musical activity. (Likewise we shall omit discussion—though perhaps this too would be an attractive chapter—on disorders in amusement activities, on tone-deafness, note-blindness, on the loss of power in reproducing musical thoughts, or on musically useless components with apoplectic stroke, in appearance exactly or somewhat like aphasia). This would be neurological or in some other way specialized, and frequently psychological, detail work, insignificant yet too burdensome for general professional-sociological research.

In all our succeeding specialized investigations we shall no doubt perceive diseased organs in professional individuals, but we shall never disregard the inner connection of individual parts to the whole. Stated bluntly and with exaggeration: It is not an organ which is diseased because just there we find objective pathological symptoms and subjective complaints, but it is the entire person who requires our counsel. Indeed, the intimate connection between muscles, nerves and brain has already demonstrated that we cannot make much progress with a purely local diagnosis. In any event,

the outlook here must not be restricted to the periphery.

If two equally powerful, equally well-fed and equally dressed persons enter the water, remaining there for the same length of time, and if one contracts pneumonia as a result of the immersion, while the other remains well—we cannot say, because of this, that the water, the cold and the air have made one sick and not the other. The reasoning of science leads us to the following conclusion: The constitution of one was susceptible to the admission of the infection germs; his body offered less resistance than the other's to the penetration of bacteria.

This is not unlike frequent professional diseases. When, from among twenty outwardly-healthy persons, instructed in the same method and practicing for the same length of time, two suffer cramps from their work and the others do not—it follows that it was the fault, not at all of the method and only partly of the exertion, but essentially of the mechanism concerned, in causing the appearance of the disturbances. The general physical and mental state, the familiar organization and the general or local predisposition were the grounds upon which an otherwise ineffective attack of disease could have developed. The research into all of these hereditary and well-known components, into the endogenous as well as the inherited mass of transmitted factors, is just as important for the diagnosis, prognosis and therapy of professional diseases, as the inspection and palpation of the organs concerned in which the accidental disease exists; the examination and the psy-

chological penetration of the personality are no less valuable for medical advice than the inquiry into the relation between work and deficiencies in work.

Well, even to-day one can refer those diseased from work to Edinger's famous theory of consumption which states that organs in greater use are more apt to become diseased than those which are used less or not at all. But although the varieties of altered functions are bound to special professions—the writer does not suffer from his legs, nor the violinist from his larynx—nevertheless the problem of tendency toward professional disease is not yet solved by this. The questions of heredity and degeneration, evident from the genealogy of a diseased person, and the analysis of the fundamental conditions for the possibility of the malady give us, in a narrow connection with the general and local symptoms of the disease, a first insight into the character of the professional disorder. Through analysis it is sometimes established that physical disturbances are even conditioned by mental states. Here, therefore, the entire constitution of the individual is especially significant for our understanding. Indeed, our inner view must always circle around the psychical ailment, or the evolution of mental symptoms into physically impressive ones.

This would be the place to indicate the deep biological connections between bodily structure and character, physical stigmas and psychical relationships, and the entire external form and temperament. According to Kretschmer's ingenious doctrines and scientific research, such connections certainly exist; and the eye of the

layman is already able to differentiate between the sensitive and the overesthetic types, and between the robust and the motor types. Mimic gestures, head and feature formation, height, stoutness, life-tempo, mood-level, skin and bone structure, vascular and glandular apparatus, development of the motive mechanisms, form and play of the hands, elasticity and heaviness of the walk, the equipment and its application in the struggle with society and social opinions—all these enter into the impressive exploration of an artistic organism. The movements of expression in a performing musician already force upon us such thoughts of comparison; and that which, for the interpreting musician, is the personal balancing between the outward person and the inner experience of the work, signifies, for those actively creative, the mark of personal style in a work of art, in the enigma of an ingenious score.

Now, Kretschmer has conducted his most essential inquiries upon nonartistic persons, moreover upon diseased people and such decidedly lower classes of society, and upon definite land regions. Among the geniuses whom he psychically delineates on the basis of portraits, works and memoirs, there is not a single musician. But just these subjects would offer the richest possibilities to effect the harmony between physical and temperamental types and outward appearance and inner structure.

Here also, among musicians, "schizoid" and "cycloid" personalities are frequent as perhaps in no other branch of work. To make these examinations methodical is a problem the solution of which would bring the recog-

nition of prominent characteristics of classical, romantic, sensitive and hypermodern music as influenced by the character and physical types of their creators and organizing spirits. The formulation of "asthenic," "athletic" and "pyknotic" types already draws attention to distinctions with reference to the frequency of their appearance in exercising and creative artists.

The athletic type is virtually unrepresented among composers of genius (with the exception perhaps of Reger, Händel and Verdi); among interpreters it is represented almost only by singers (Chaliapin, Battistini and Niemann). These are the individuals with broad and tall build, with sturdy bones, projecting shoulders, high head, relatively graceful bodies and legs, with overpowerful (hypertrophic) muscular system, and with prominent bone-relief in the facial structure.

The history of music is quite rich in men of genius of the pyknotic type who, according to Kretschmer, exhibit the following stigmas: A strong circumferential development of the visceral cavities (head, chest and abdomen), a tendency toward abdominal fatness, a thick-set figure, a tender, broad face on a short, thick neck, and medium height. In this class would be classified Beethoven, Bruckner, Brahms, Schubert, Bach, Wagner, Meyerbeer, Tschaikowsky, Rossini, Schumann, Humperdinck and Schönberg. Of great conductors of the pyknotic type, I know only Steinbach. As opposed to this, the number of pianists, singers and violinists of this category is very large (whereas mixed

forms of the asthenic and pyknotic types indeed, are even to-day frequent).

The asthenic type presents a slightness in corpulence with normal height (or taller). Between bodily weight, which remains below average, and height, there exists a similar discrepancy as between the chest and abdominal measurements (50.5 kgs. to 168.4 cm. respectively 84.1 cm. to 84.7 cm.). These asthenic types are slender, lean, lanky, anemic, muscularly weak; they have slender-boned hands, flat thorax, narrow rib angles, and no abdominal fat. In the intermediate type there are sinewy-slender, elastic, progressive and suggestively active artists.

Of the virtuoso type, I would consider in this class men of such caliber as Paganini, Liszt (but not Joachim and Rubinstein), Kreisler and Erdmann (but not Halir and Gieseking). The basic structure of the modern conductor's body is asthenic: Mahler, Klemperer, Fürtwängler; while Bülow, Ochs, Kleiber, Busch and Abendroth do not present unmixed physical traits more generally. In the ranks of creative musicians of asthenic form there are to be mentioned Berlioz, Strauss, Schillings, Recnizek, Weingartner; also Puccini, Schreker, perhaps Hugo Wolf and Pfitzner.

When one weighs the number and the value of the majority, it almost seems as if the pyknotic type were reserved in history for the genius-creator and the asthenic type for the genius-interpreter. But to-day that is still dialectical speculation. Perhaps it will sometime be developed into a science. The characterological

nuances of the pyknotic-cyclothymic and the pyknotic-schizothymic personalities described by Kretschmer would present extremely rich material for investigating the territory of musicians. Possibly there will be an explanation for much which until now has been obscure and disconnected, many things about seclusion from the world, idealism and fanaticism, much about struggling, despotic and energetic strength, about consistency and domination, tenderness and sensitiveness, exuberance and emotion, and about lyrical and dramatic longing (or even talent) mixing with hereditary, biological, physical attributes in the inconceivable nature of character, temperament, artistic species and development.

So far we have not arrived; but may we attain the goal. Pedagogically and in selecting the best, this new science for us is not yet a conceivable instrument for understanding, but a dialectical experimentation with a serious background of experience. We tread more certain ground when we proceed from the genius to average talent and when we think of the most usual manner of playing in nervous artistic types.

It is part of every musician's fundamental equipment to possess the mental impressionability and the continuous preparation to bring forth and interpret the profound mental feelings through physical reactions and movements of expression. It is also peculiar to every musician to possess a special excitability and an ability to react to music, to think in tones, to be able to impregnate the conceived with fantasy, and to possess facile sensitivity of the entire nervous and vascular system. We are faced with a complex of problems which

concern every musical talent and student—a complex which creates a flowing course from the normal to the nervous type, from a mildly affected to an emotional person, from the control to the sacrifice of feelings, from the mentally alert to the psychopathic, and from the nervously sound to the nervously diseased. First of all, we shall direct our attention to this most important problem-complex.

CHAPTER II

NERVOUSNESS

THERE is no term in medical terminology which has so broad a meaning as that of "nervousness," under which collective name are known and unknown all such forms of nervous conditions as neurasthenia, hysteria, psychasthenia, psychoneurosis, psychogenia, etc. To laymen, and also unfortunately to physicians, the significance of this term has become subordinate—the word itself, because it denotes something most important, has been turned into a catch-word. Undoubtedly nervous debility is often a factor which must be constantly treated with enormous and obtrusive determination, in the medical, human and social life of an individual, as well as in the mechanism of masses and nations. But without doubt laxity of research, superficial examination and deficient psychological focusing are very frequently concealed behind those distinguished diagnostical terms and thus screen an actual defect in knowledge by the use of pseudo-scientific language which is plausible and often pleasant sounding to the patient's ear.

Now it is really immaterial to the practitioner whether he can always weigh and distinguish correctly between psychopathic and neurasthenic affections, and hysterical or, in some other way, psychogenic ones (*i. e.,* conditioned by imagination). For the specialist also that is

not very simple, in view of all the attempts at theoretical analysis. And if this theoretical analysis should go too far, as for example in neurasthenia, when just a small difference from hysteria is noticeable (as has recently happened), it nevertheless remains important to admit the opinion that the harm caused through such an error is minimum. Therefore, that unscientific word of every-day language, "nervousness," always sounds better from the lips of a practitioner than a *terminus technicus* quickly fished out of the huge pot of psychoneuroses.

But for that practitioner who treats his patients for months or years before they see a specialist in neurology, it is important to be able to reach two fundamental decisions: First, whether a physically or organically conditioned nervous complaint can be absolutely eliminated as the cause of the nervous disorder; second, whether it is a question of a functional-neurotic (nervous) disease and not of a psychotic ailment (mental disease). Of course, there are flowing transitions, and it is not always easy to state whether certain head sensations are to be attributed more to an anemic disorder in circulation than to a hypochondriac-neurasthenic constitution—whether vertigo without physically traceable disease symptoms should be interpreted rather as a sign of a beginning brain sclerosis (calcification) than as a neurosis. There are not only transitory forms, but there are also combinations in which a somatic (physical) ailment is intensified, superposed and displaced by a purely nervous one, where a definite subjectively suffered symptom can or must be explained in some way

from among all the various objectively perceived disease motives.

But the discussion will not be exclusively of these combined—the displaced and superposed forms. Above all, it is important that the physician should not focus at once upon certain "typical" complaints of the neurasthenic, should not disregard the objective value of the symptoms and should not perchance overlook the threatening picture, obscured by the complaint. For, as is the case with an anatomical, inconceivable, psychogenic disease, these same typical complaints can also appear with equal intensity and frequency as the forerunning warnings of a serious organic, nervous complaint. Indeed, this should be taken into consideration: That, with all ever so varied kinds of physical, internal or nervous complaints, the balance between the absorption and expenditure of nervous energy and nervous elasticity will, through non-functioning in the organism, at some time be disturbed—in short, that a neurasthenic or hysterical complex is the result of a physical indisposition. Not to realize this means not to realize the essential factor of the curative system.

Naturally the reverse disease course is also possible; for with the close relationship between the central nervous system and the internal functions (heart, stomach and glands), the primary affection of nerves also implicates those organs dependent upon them. The penetrating and temporal detail anamnesis (previous history) as well as the accuracy of the examination must guard against such errors. And finally, the practitioner must also bear in mind several neurological (nervous-

medical) diseases with all their subjective manifestations which, very willingly and easily, give occasion to be mistaken for psychoneuroses.

The second fundamental distinction is that between neurosis (nervous disease) and psychosis (mental disease). This distinction it is often very difficult to make since our knowledge of the many "extreme conditions" is enlarged. One should not underestimate the significance of this fine analyzing diagnosis, for only in the rarest cases does the question arise of a dispute over words in which word-superstition, the loyalty to schools and definite thought processes, leads to the chief evaluation. Before thinking about the actual influence of the discussed complaint, it is truly important to consider whether it is a case of a chronic or a temporary, a permanently disappearing or a periodically recurring, mental disturbance.

Moreover, the most familiar mark of the beginning of a psychosis is often no other than that visually embodied in the continuous state of neurasthenia. Nothing is so harmful as a physician's false prognosis, a mistaken opinion about the acute or chronic progress of a disease—not to mention the impossibility of curing it —so that a mentally diseased person, not recognized as such in time and requiring institutional advice, treats himself and his environment harmfully at home.

These considerations indicate the gravity with which the word "nervousness" should be pronounced. Even such a harmless word—precisely such a word—can become one's doom; not through that which it contains within itself, but through that which it falsely employs

and permits to be missed. It is just as important for the individually working practitioner, for the active clinical interne and surgeon and for the country doctor to guard now against carelessness as it is for the nerve specialist. As we have repeatedly observed a brain tumor being treated for months as a nervous headache, just so have we observed innumerable cases of mentally diseased persons under the one monopolizing heading of "nervousness." Just because even the best and most thorough physicians make such errors in diagnosis, just because at certain periods valid distinctions are not yet traceable between customary neurasthenia and the beginning of paralysis, and between hypochondria and an actual depression—precisely for these reasons therefore it behooves the conscientious researcher to establish the diagnosis as nervous weakness only under certain precautions, yet under the most rational, far-reaching possibilities.

It need not be a secret that in reality the diagnosis of an ordinary neurasthenia or hysteria is frequently an easy task. The neurasthenic is usually recognized not so much by the trivial objective indications of his trouble (which indeed are still very ambiguous), as by the tenor of his complaints, by the manner of his expression, by the character of his gestures, by the play of facial features and hands, by the tempo of his representation and by the accumulation of complaints, which generally reflect the complaints endured in the sick person's environment and known by his relatives.

The objective and related anamnesis now first promotes the revelation of the correct quantity and true

intensity of nervous symptoms. Because neurasthenia is a pathological change in the inner life, the patient's relatives, sooner than the patient himself, will observe and recognize as disease symptoms his abnormal mood-transformations, their lasting affects and the associated movements of expression. Nevertheless, the symptoms usually impel the neurasthenic himself to seek a physician. He suffers from the discrepancy between external stimulus and his increased mental reaction; he feels the complete excitability of his being, his irritation, the ready response of his emotion, his anxious-annoyed moods; and he recognizes these phenomena as disagreeable mental symptoms accompanying disease.

First of all—and most important—he notices his physical incapacity for work; he works neither so intensely nor so perseveringly; he is indolent and quickly tired; he is not mentally alert; and he loses the desire and the initiative for any occupation other than mechanical. The physical discomfort is increased by the lack of restful sleep at night, while the need for sleep and rest during the day is continuous.

All these physical signs now in turn concentrate upon the intensification of psychical irritability. Self-observation leads to reflective judgment of the health of the internal organs. Then, as in the cases of many ailing persons, he meditates upon easily accessible, special symptoms—pulse, appetite, bowel movement and head sensations—till they reach the point of a tormenting hypochondria, of a greatly developed imaginary disease.

Upon purely physiological grounds, this introspec-

tion already increases the sensations observed. The pulse slows down or is too rapid, the tongue appears coated, constipation sets in, the head aches and the person is possessed with fear. As a matter of fact, all this can, more or less, be objectively verified; the neurasthenic would be unfamiliar with no subjective feeling of illness—from the pains of an ulcer to the paresthesia of the tabes sufferer, from the dizzy attacks of the sclerotic to the asthma of heart disease, from the head pressure of the migraine sufferer to the hand tremors of paralysis agitans. Everything is simultaneously suffered, manifested and proved. But it does not last; new impressions and new reports bring new complaints and overwhelm the old ones.

In the home, where emotion and tongue can move more freely, they increase a hundredfold; at the doctor's, they are again intensified under the influence of the examination. But in pleasant, unfamiliar society, at the theater and concert, in conversation with fellow-sufferers and well-meaning friends, when being diverted from self-concentration—complaints and symptoms vanish.

Of course, neurasthenics do suffer. But their suffering is not stable as is that of an organically diseased person; it does not advance but is dependent upon mental factors; it dwindles and grows in proportion to the intensity of the momentary emotion; it is psychically influenced; seldom or never do its general magnitude and duration correspond to the impression one gets from the physical state.

The neurasthenic can complain for years and decades

about attacks of fear in the region of the heart and about the slackening of its beat, without the discovery of even a faint sign of heart inadequacy; he can complain for years about lack of appetite and constipation, without there being a material change in weight. But, with all the resources of clinics and laboratories, this contradiction obviously never frees one from the obligation of eliminating an organic cause.

This also holds good for the generally known "nervous" diseases of the internal organs, above all of the heart and stomach. The diagnosis of heart and stomach neuroses, which indeed signify nothing but neurasthenia with predominating participation of the vegetative nervous system, or preponderant localization and concentration of its symptoms upon a single definite organ—this diagnosis stands and falls with the exclusion of the organic foundation.

The discord between the so-called objective state and the measure of the complaints naturally as yet have no significance in the judgment of the actual subjective gravity of the disease. Finally, no one complains of a headache who does not feel it; and in order to be able to establish the amount of exaggeration, one must have observed a diseased person, unseen by him, for a long time and on various occasions—in the execution of his duty as well as in the spontaneity of his hobbies, in society and at home, during a stroll and in the consulting room. We cannot evade the feeling that the neurasthenic gladly and emphatically stresses his complaints to his physician and to his family; that many a neurasthenic is fascinated by his sickness and clings to it. With many

persons, normal self-observation passes into a morbid hypochondria, in which the actually present complaints certainly cannot be reconciled with the tremendous verbosity of the complaints which the patient utters.

One must entirely forget the system of drawing diagnostical conclusions concerning neuroses from physical symptoms. At best, they support the impression which the psychical personality registers. Neurasthenia and hysteria are, in the broadest sense of the word, mental diseases. The diagnosis of hysteria will not be voided even if the sinew reflex is normal or if there are vomiting and cornea reflexes, and, on the other hand, insensitivity of the skin to pricks does not yet prove hysteria, but can, at most, fortify the supposition that one is dealing with a hysterically impaired individual. Besides, one should not overestimate the so-called objective symptoms of neurasthenia: Reflex rises, vasomotor (vascular) irritability, fluttering eyelids, trembling of the hands, etc.; in diagnostical considerations and in medical opinions, they are of the second, and not of the first rank. Nevertheless, the physical examination is important in order to prove the absence of typical organic defects (for example, eye-pupil disorders); however, it is not a secret fact that the same symptoms of reflex irritability are observed in organic nervous diseases and in maladies of internal organs that accompany physical decline. Neurasthenia or hysteria can be associated with any other disease, as they can be the most conspicuous subjective expression of a purely physical affection.

That which was here stated in detail about neuras-

thenia also applies, in great measure, to hysteria. With the many changes through which the conception of hysteria has passed, the practitioner must confine himself to the diagnosis of a functional nervous complaint without particular specifications. The characteristic features of hysteria are: Strong susceptibility to suggestion, the state of being easily influenced especially by pleasure and agreeability, intensified sense-irritability always ready to be discharged, lack of balance between affect and the expression of affect—that is, affect increased at a vain occasion—and the absence of reaction during strong mental irritation; there is lack of self-control and of the check of affect expressions. The hysterical person can be diverted, is capricious, obstinate, "no-telling-what-they-do," unreliable, fantastic and irritable. Unpleasant, disturbing memories are submerged in the Unconscious—therefore the reporting of experiences becomes incomplete and unreal. The susceptibility to suggestion is so strong that, for instance, during a medical examination, the question whether there is pain from pressure, or whether there is sensitivity to touch, etc., serves as an influence in the significance of the question. The affect expressions often assume a specific form in hysteria; the reaction to psychical influence is transmitted to the physical by the mental—by the affects of grief, fear, despair, joy and rage; there appear, as pathological reactions, cramps, paralysis, swooning, anesthesia and disturbances of the sensory functions (dumbness, deafness, etc.). Diseased reactions in the form of hysterical states of irritability and confusion are deeper; they habitually appear in direct connection

with intense experiences stressed by affect and, as a rule, the recovered person fails to recall their contents (division of consciousness). One speaks here of "situation-psychoses" whose classical example is the so-called Ganser's psychosis.

I mention these specific symptoms, which indeed have already taken a firm grasp upon psychiatry, only in order to point out the enormous multiformity of the picture of hysteria. One should speak rather of hysterical symptoms than of hysteria, if the traits of hysterical nature were not brought to light clearly as the strongly marked reflection of a psychically impaired personality.

Therefore, those disease symptoms in a patient which cannot be established as organic, are psychogenic; that is to say, rising upon the grounds of certain conceptions —perhaps the idea of incurable disease—or of continuous undernourishment and incapacity for work. Psychical maladies after misfortune here play an especially great rôle—just as strong affect exertions cause similar disturbances (arrest and imprisonment psychoses and war neurosis). It is now a matter for refined, specialized dialectics to distinguish between psychopathy, neurosis, neurasthenia, hysteria, etc. The practitioner calls the abnormal functional symptom psychogenic or psychopathic; thus he remains protected from blunder and captious censoriousness.

As to treatment, it is wise to inquire whether a nervous debility is merely the expression of an external cause or whether it is established as a natural tendency in the person's constitution. Without doubt physical or

mental neuroses can be produced in quite normal individuals, by certain severe calamities—skull injuries, elemental disasters and catastrophes, pregnancy, overwork and exhaustion. On the whole, in the innumerable cases of abnormal, unsteady, paranoiac and hysterical characters, in sexual neurotics, in the depressed and the worried, and in those suffering from a compulsion-complex and phobia, it is not difficult to ascertain that the condition is a matter of an inborn, endogenous and constitutionally embedded form of psychical impairment.

In these cases, life and every-day existence really act as levelers; but a single serious occurrence unbalances those in a state of constitutional nervous weakness. Then this collapse impresses us in the external forms of nervous exhaustion, of mental depression, of compulsion-complexes, of hysterical convulsions, etc. A thorough anamnesis leads to the root of the suffering, to parental and ancestral background; penetrating psychical questioning and analysis (psychoanalysis) frequently reveal connections which the outward picture would not lead one to anticipate.

It is not necessary for the physician or the teacher to fathom and to understand the complications of the mental mechanism in the sphere of neuroses, of extreme psychopathic states, or even of psychoses. But he should have a presentiment of them, should also be aware of them in the twilight of knowledge. For (with the suggestibility of the nervous) it can be just as serious and dangerous a matter, indeed as irrevocably wrong and disastrous a matter, to have treated a pseudo-

neurasthenic like an actual one for even only a few months, as it is an indifferent matter to have treated a hysterical person perhaps for years.

That which has been said here about the average person in all types of professions holds true, in an intensified degree, with the musician. In order to play music, to live in music and to become engrossed in its technique, its essence, its forms and its ideas, one needs an especially attentive, impressionable, sensitive nervous system. Hence the musician himself is already a type of the nervous person. Continuous irritation, through tone-stimuli from without, through still unbroken provocations of fantasy and of inner formation, and functional experiences of the musician constantly increase the physiological tension of the brain and of the nerves or organs dependent on it. An enormous reduction of nervous matter and a gigantic process of transplantation in the cells of the cerebral cortex must take place when the mechanical attains its purest form in an art-production, the automatic in a personally blossoming work, studied knowledge in memory possession, or when technique changes into feelings of expression.

Millions of memory remnants in tones, sounds, melodies and rhythm adhere to our brain. In every moment of creating or playing, all these motor- or sensory-memory parts must be active and at the same time must be subordinate to the artistic idea of experience, to the law of style and to the individual significance of interpretation. The great value of memory to the musician consists therefore not only in that he possesses it (and always has it prepared) but still more in that he can

supplant it. For fantasy and creative power are enemies of memory.

The accumulation of material already involves a continuous demand upon the nervous system and also upon the vessels. Where there is more work there is also greater blood circulation. And many congestions at the head, complaints of pressure and tension in the cranium, humming, cramp and pains in the forehead or the back of the head, can thus be explained.

Irritations which start purely as artistic ones can indeed radiate over the entire cerebral cortex and thus cause a permanent condition of irritation. And, as the reaction to it, there follow relaxations which sink under the average middle-line of physical tonus (physical tension). The body becomes sluggish and tired.

In highly imaginative artists, the work of the brain—chemically and associatively—does not cease even during the night. Imprisoned ideas are completed, impregnated and crossed before sleep, during sleep and in dreams. Thus, even sleep occasionally becomes creative, but more often it is lost in the pressure of melody and rhythmic forms.

We know this tenacious power of the brain—this holding firmly to that which has just been experienced in every-day life. Unfortunately, it is not always the most precious but more frequently the most banal things which we cannot banish from our minds (popular songs, dances, operetta). These undesirable memory remnants are exaggerated and tormenting.

It is the same with the best thoughts of the inner-working person. Only when he has determined, written

down, lived through and released his reactions to them —only then comes the benefit of inner peace, of the need for sleep and of sleep. There are musicians who are most productive in just such hours of the night, all the more since then they do not come in contact with outside life. In principle, this division of day and work is certainly wrong; in the individual case, one cannot and does not wish to forbid it.

In the activity of professional musicians, a strongly marked neurasthenia will often be hardly perceptible. The compulsion to discipline and subordination supersedes physical discomfort or makes one forget individual complaints; for practical business reasons, excitability must remain suppressed and blustering must be eliminated.

In domestic life, one flies into a rage much more emphatically. Indeed, it sounds absurd but is true and also understandable, that a neurasthenic kettle-drum player is irritated at home by the ringing of the doorbell and that a conductor who with genuine ease drives five hundred instruments and voices to a most brutal expression of power, is put into a state of nervous excitement, fright and ecstasy by his wife's sweetest call.

In the impulse to serve an artistic idea, all the bodily indispositions, even the slightest, are stifled. And the same conductor, who rehearses a gigantic work for three hours without tiring, grows lame when he would stretch out his arm in some simple assistance at home. Now, this is not a physical weakness, though it feels just like one, but a mental disinclination, which spreads over every mechanical activity. Mental participation in

work conceals all physical feelings of reluctance and endows the body with excessive strength, which it does not have at its disposal when the mental strain is absent, or almost absent.

The nervous person usually suffers in his professional activity much more than he may show. Yet there are many soloists whose nervousness in playing is quickly noticed to the disadvantage of the artistic effect. They quickly transmit their feelings into movement, and are therefore often too early in "chiming in;" their inner haste dislikes the adagio, and they precipitate a slowish composition in restless and uneven time (coat-check tempo). Excitement leads to trembling movements in the bowing arm, to false vibrato in the left-hand fingers, and, in the woman singer's voice, to tremolo and to poor, agitated and superficial breathing. Vasomotor (vascular) disorders, especially under the influence of the affect, seldom fail to appear; the heart throbs quickly and forces the breath to still faster puffs, the face turns red, the pianist's fingers become moist—circulatory vascular disorders in the head cause glimmering before the eyes, sensations of fear and dizziness, and failure of the memory.

After a brief period the nervous person becomes tired and there is a decline in the tone expression, the surety of vocal intonation, and the strength of the touch. If this has occurred repeatedly, then in the nervous person's mind the thought is firmly planted that the same must happen again; he awaits the mistakes fearfully, observes himself hypochondriacally, and closes the pernicious circle in such a manner that the attention

upon the nervous troubles intensifies the suffering, that the awakened concentration discloses even more disease germs, and that a magnified psychical defect in turn again increases the attention. The trembling violinist, the perspiring pianist plagued by heart palpitation, the weary, feeble-voiced singer becoming hoarse, the confused conductor beating time erratically—all these are occasionally observed types of the concert platform; and also those whose memory thread during a concert is suddenly broken in a composition which they have practiced for hundreds of hours, and perhaps have already played dozens of times in public.

The average nervousness is unimportant to the musician in his work; at most it can become, in social intercourse and in family life, a permanent source of reluctance (for the sick as well as for those around them). For nervous people actually believe themselves sick; they have an understanding of the violence and the enigma of their natures.

Nervousness, in its extreme form, can become a menace to a profession and can compel its abandonment. To our nervous musicians, rushing and speeding the tempo has become "artistic." There are few adagio players and hardly any Bruckner conductors. But, on the other hand, the ardor of a Strauss or a Berlioz symphonic movement is well rendered by every average conductor.

Nervousness, which represents one of the most frequent disturbances of professional musicians, is therefore a disease of exhaustion and as such is mostly acute and temporary. All of its symptoms—increased irrita-

bility, quick fatigue, organic indispositions, ill-humor, headaches, trembling, insomnia, apparent memory-failure, etc.—are conditioned through a disturbance of energy capacity in the constitution. The balance between the absorption and the release of power is not adapted to the individual physical structure and is disturbed. To have the balance correct requires economy in the use of energy, the greatest possible care of the organism, and, if necessary, artificial tonicking for the nerves, muscles and vessels.

It is by no means easy to generalize about how far the need for rest and sleep extend; it is to be decided in the individual case. There are musicians to whom the deprivation of the necessary mood-temperature to recovery means the simultaneous deprivation of the possibility of playing or theorizing. In severe cases of exhaustion, of course a complete rest (occasionally resting in bed) cannot be avoided. In other instances one must be satisfied with at first a sudden, and later with a diminishing withdrawal from work. In this manner one protects the desire for recovery and brings the will, the rest and the work into tolerant conformity. Here one also succeeds by adhering to the professional idea that the sick person's depression and anxiety remain unimportant. Moreover, an unhappy and unwilling organism does not take care of itself and does not allow itself to be cared for.

The dietetics of work must not be more harsh than the dietetics of the mentality and the zest for life can endure. The average neurasthenic need not be absolutely inactive; but on the other hand mental exertion

should alternate with relaxation, rest with action, and reclining with athletic participation. That which is now apparently done, or is not permitted, to the disadvantage of artistic progress, occurs in reality simply for the promotion of a slow curing process. Energy is not lost, even in forced rest. He who has again commenced to produce his former amount of work after a period of illness or exhaustion, knows how much more easily his technique flows.

Now again the phases of optimum, of which we spoke previously, are to be found according to period and duration. The person, and not music practice, is to be restored. When one directs that a musically charged youth, or a person striving for musical expression, be deprived of his instrument in order to reduce the practice time from eight hours to nil, one frequently takes from his authoritative power to psychotherapy a material need for treatment. One often attains his goal sooner by reducing the working time to two periods of one hour each, and permitting the interval between to be utilized under control by baths, packs, sedatives, healthy diet, outdoor activities and naps. Thus one still has a relatively happy patient—a patient who accepts encouragement instead of hostilely warding it off; a patient before whose eyes hovers, as a cause for rejoicing, the boon of being-able-to-do-more-soon.

Work as the reward for the reorganization of the body and nerves—that is the aim which must also play a principal rôle in the advice of the physician. As for the rest, one may be allowed to trust the experience of a Flesch, who sets up the following practice-rule:

One hour of general technique (études, scales and bowing), an hour and a half of applied technique (technique of the repertoire, parts of compositions), an hour and a half of purely artistic playing, devoted to style and finished performance. Between every two hours, a quarter of an hour of absolute rest must be taken. The clothing should be comfortable, but not as a rule different from that of the concert stage (perhaps without the collar!)—do not be afraid even to sit down for a quarter of an hour during practice. One should regulate the temperature and the flexibility of the fingers; the skin should be neither hot nor cool, and neither moist nor absolutely dry.

Nourishment is important, but it is not the deciding factor. Only in extreme cases of nervous relaxation, which have led to bodily weakness, is it in order to put on weight and, if need be, with the aid of the highly praised, greatly overrated arsenic and phosphorus preparations for nerve nourishment. The druggist, in such unsystematic cures, has more benefit than the patient. There are persons who can never become stout and fleshy, and yet can vie, with those who appear well nourished, in tension and elasticity. One cannot transform a constitution artificially; one cannot produce natural tendencies through temporary training or through physical strengthening by outer forces.

Surely it is worth while to strive for a settlement on average weight. But the unmethodic treatments for becoming stout are senseless. One knows that even in the state of hunger (Russia showed thousands of examples) the nerves are not altered anatomically. "Roll-

ing into fat" should be restricted to those who are actually lean, and not to the usual nervous person.

Balanced diet, rest after eating, pauses between practice periods, absence of pampering, timely, willing suspension of exciting factors (tobacco, alcohol, women), utilizing the night for sleep, hygiene of the body, care of the skin, pumping the lungs thoroughly with pure and not café air—these are the fundamentals upon which the inherently untainted organism develops freely and without accumulated disorders in the sense of "nervousness."

Trivial nervous complaints are common to every person's mental range. And the serious mental disorders are almost never the consequences of overwork.

In this connection, a word should be spoken in behalf of the favorable, positive relations between nerve and muscle, between mental and physical phenomena while playing and listening to music. Not all that appears to be nervous in the movements of expression is diseased; not all that is diseased, is to be condemned; and not all that seems peaceful is free from nervous traits. Some eras, styles, cultures and creators profess themselves open to the ideal of harmonious peace; other eras, other cultures and other styles evince discordant unrest, nervousness. It can become productive and creative. It is, perhaps, the great affliction—or perhaps the crowning treasure—of our time.

[1] In order that a musician make an impression upon us, in order that we observe a musical feeling and pre-

[1] This paragraph and the three which follow it appeared in 1925 in the Music Supplement of the *Vossischer Zeitung*.

serve it within ourselves—for these purposes there is required merely the transmission from without, across to the auditory nerve-fibers as far as the acoustical sections of the cerebral cortex. With a sound hearing, there always will be a normal auditory sensation also.

But to enjoy music, to follow melodies, to distinguish phrases, to differentiate between harmonies, to extract from the mass, and to analyze, the individual and the essential; in brief, to judge the whole work otherwise than from the impression created by the conspicuous effect—these faculties demand the functioning of not only the auditory centers but also of the entire cerebral-cortex apparatus. Regions of movement and sensation work continuously in a fine performance and in gradation with each other or against each other. The mechanics of a simple procedure: Pleasurable feelings must be actively intensified by ourselves for the real enjoyment of music. From the primitive process of nerve-conduction there must result an associative musical experience. Our knowledge of the factors of stimulation, our knowledge of the technique of music and its medium, can be beneficial to the enjoyment of music; control with the aid of memory and the ready recollection remnants of music, stored up within us, can hinder, disturb or even destroy the free devotion to musical work.

But the ear alone is too weak, too immature and primitive, for this complicated mental process of inner musical reproduction. Deaf masters even compose without the control and supervision of the special hearing apparatus. The inner ear, the intrapsychical creative

or associative phenomenon of the fantasy's activity, completely compensates for that physical deficiency.

Those who listen to and enjoy music unproductively have, in their eyes, the supreme means of aid for enjoying music. The eye seems to hear, while it adheres closely to the lines of movement and brings the visible and the audible into mutual harmony. The eye expands and is strained during rhythms of a struggling nature, during jubilant melodies and during impassioned dances. Even the play of eye-pupils when deprived of will, becomes animated. The entire tendency of relaxations and tensions in the body is reflected in the aspect and in the expression of the face. In harmony with nuances in affective excitements of daily life, the countenance falls in sorrow and disheartenment and the eyebrows are drawn together gloomily in tempo with the adagio; the countenance sparkles and beams to the storm of the allegro and seems to laugh to the joyful tempo of the scherzo. The mental phenomenon of the musical progress from theme to theme, of logical transitions in definite form, is translated into physical motions. Such reactions as the jerking of the body, play of fingers, acceleration or suppression of breathing, turning red or pallid, becoming quiet and introspective, insolent or humble position of the body, rocking and oscillating—all these are the automatic, unconscious translation-processes of mental into physical complications. Indeed, even the simple mental attitude of inner security, of meditation upon a certain phrase, occurs together with the participation of muscular apparatus. We can recapitulate a melody inwardly only if we can join in

singing it inaudibly. In observing oneself during meditation, a person becomes aware that the larynx muscles are tense, always awake and prepared to bring forth in tone, at first through quiet attempts, a melody which does not "fall in." And in like manner many musicians move their fingers and feel to the rhythm of music heard or imagined. A part of becoming conscious of all these physical movements is already musical enjoyment.

When the listener attempts to make these accompanying symptoms of mental sympathy invisible, the performing artist mounts on the wings of their ecstasy, rapture and exaltation. Now there also takes place a compromise, according to the ardor and talent, the refinement and temperamental state, of the artist. Calm can just as readily be a symbol of reflection and maturity as it can be of mechanical routine or lack of interest. Ardent gesticulation may be the wonderful mark of passionate unburdening, of fiery eloquence and of thoughtful soaring, as well as of excess, of shrieking phrases and of erotic frenzy. Emotion is distinct from affectation; only in the finest combination of the artist's performance and of his musical gestures, of musical conception and reproduction, do the physical feelings of expression act beautifully and artistically.

Acquired knowledge and the hoped-for goal make it apparent that the gap between creation and reproduction is of gigantic proportions and unspannable. The affected violinist, pianist or conductor destroys good taste by his movements of expression. A ridiculous effect is produced.

The listener's eye is always open to discern the feeling for style in the musician's gestures. Thus, the countenance is lifted; the suggestive movements of the artist intensify the listener's impression. A motor as well as a sensuous type is dear to us and worthy as the representative of a certain art. It is only when a phlegmatic person encounters a fiery work, a choleric person a pathetic work, and a nervous person a religious work, that music no longer has an effect. We sense this quickly. The eye is, and the body becomes, the standard of our participation.

In value the musician holds the center between the mental muteness of a marvelous technical apparatus and the complete devotion of the actor in gestures, mimicry and body. His movement is the outer reflection of his inner participation. To view this without being diverted from the work by the personality is esthetic experience.

In Nikisch this symmetry, this comfort to eye and ear, was developed to perfection; in Busoni, the form of the artist absorbed the formation of the work itself. To-day Fürtwängler seems to me to be the most natural, although not the most masterful, finest-styled interpreter of orchestral music; and of choral works, Ochs. The wisdom of Mozart's maturity shows in the well-bred gestures of Walter; the brio of battling music reveals the gestures of Kleiber and Klemperer struggling with the work.

When the intellect has become ripe, and the heavings have quieted down, then there are only latent movements in the undercurrents of the body. Such agitated

calm and such loud, living silence diffuse the playing of Ansorge, Vecsey, Flesch, Rosé and Schnabel. In their nerves, the nervousness of the period has come to rest. The musical soul of classic melody has made the player's body submissive to its concept.

CHAPTER III

MENTAL ABNORMALITIES AND EXTREME STATES

Psychopathic Personalities

THE complex of subjective disturbances which we designate as nervousness may affect any physically healthy and untainted person, if the demand on his constitution and on his ability for production be temporarily enormous. There is a limit to every person's and every organism's capacity for work. If this is exceeded, then the body retaliates with exhaustion—a strained muscle with pain, overexerted hands with tremors.

With a "diseased" symptom, which however sometimes represents a healthy defense measure, the unconscious will asserts itself on the side of caution. The trembling hand can no longer guide the bow; and the paining thigh prevents further mountain-climbing.

Acquired states of exhaustion in an originally healthy person quickly pass away; in an inherently tainted person, they pass more slowly after greater intervals and pauses. Also, through predisposition, temperament and the entire psychical attitude, mental shocks can overstep an individual's conditional tolerance-limit. They can derange the existing equilibrium of the mentally healthy as well as of the mentally inferior. The former regain their control; the latter, with poorer

mental traits, diseased tendencies and abnormal characteristics (psychopathic personalities) fall sooner under the wheels and less often rise again uninjured. The peculiar acute state of disease is not the real disease, but just a symptom of the degeneration and predisposition released, but not caused, by external movements.

Now, is this type of psychopathic—that is, psychically inferior—person found with especial frequency among musicians? In other words, are we *a priori* more obliged to consider the nervous and mental anomalies of the musician, practically speaking, as constitutional, as innate? We must answer the question in the affirmative. And we must even emphasize the answer in view of the increased endurance of the musician against mental shocks.

Every musician possesses a special power of reacting to feelings and a likewise intensified faculty for developing into tonal expression all absorbed impressions and all sensory stimulants. Even in the years of precocity, years therefore of the growing personality, the refined outer ear in a musician of authentic talent must bring to an especially high development those brain centers responsible for musical feeling and performance.

These so-called centers are definitely localized sections of the cerebral cortex, with whose irritation certain psychomotor results are closely connected. If we do not assume that these centers in musicians are, through the continuous influx of excitement, overratedly organized and highly valued in their efficiency, at least we must admit that such a chronic, uninter-

rupted process of supplied irritation represents a considerable tax upon the cortex and association-apparatus of the brain.

Of course, a portion of this tax is neutralized through habit, through adaptation, through the grinding-in of the same courses, through the diversion of feelings while playing, while conducting and while noting impressions. There is a motor-valve for the purpose of freeing psychic power. This power of creating, this diverting and compensating significance is, nevertheless, with the sensitive musician and the unsuperficial virtuoso active only in movements of inspiration. But also, during a period of rest, there is a continuance of the inner musical work and development, originating from the world of outside phenomena or from introspection and fantasy in the soul of the artist himself.

The compromise between thinking and doing, between the absorption and delivery of musical energy, therefore, will generally be half and half, particularly when the man of great talent does not consider his especial constitution. And there is indeed no doubt that good musicians, the men of talent and of genius, were never physical giants. A great asset in artistic work often has its counterbalance in an equally great defect of physical vigor.

It is biologically not uninteresting and indeed is also of causal importance that such a balance exists. Disproportion of the physique, variation in the form and capacity of the individual sections of the body, anomalies in the sense of degenerative symptoms (overgrown ear-

lobes, eyebrows grown together, luxurious hair-growth and jaw changes) are very often found among musicians.

Individual functions of the body become neglected or hindered from full development in the impaired disturbances of the balance between body and mind at the expense of other functions. Hence there arise defects of a physical-mental nature that would often be imperceptible with normal dietetics of work and mind but that may become dangerous to the emotionally intensified musician, who generally does not give the greatest attention to the care of his body.

In his professional activity the musician has the convenient, normal way of revealing physically his emotional state. The facile translation of mentally conditioned processes into physical movements of expression is the fundamental law of his activity. This transformation is undertaken unconsciously by every creative and interpretive musician when he plays, sings, writes or composes. In the phenomena of the movements of expression can first be generally recognized the artistic objective and therefrom individual artistic creation. The tone of the violin can be acoustically defined by measuring the number of vibrations and by determining the overtones. The mathematical formula states nothing about the nature of the tone in, say, a Tyrolean violin.

In the active signs of expression (handwriting, speech, carriage, gestures and play of the features) we immediately comprehend the soul, without incidental connection. The action of expression is the physical reflex of mental absorption; it is the bridge from the

individual to the world. In the musician this correlation of the psychical inner life in the form of physical activities is infinitely graded and immoderately heightened by habit, talent and the necessity also of manifesting himself and his artistic aims. The measure and the form will not always be firmly fixed, owing to the latent irritability and sensitivity of the musician. Explosive, eruptive, flaring and temperamentally charged states belong to the characteristics of his profession.

The inner development of ideas does not cease even outside of actual material work. Therefore the musician is really always in a state of intensified movement of expression. He also makes a restless, diverted, fickle impression; his attention seems poor, since it is not determined by another's will, but is dictated and adjusted according to his own law.

Hence he does not fit into any society into which he does not wish to fit, unless the environment adapts itself to him. This struggle is waged by those who are permeated by genius; the others are reputed to be ill-humored, self-conscious, vain and egotistic—traits which, to be sure, are frequently found in musically gifted persons. Often a strong reaction, outwardly disagreeable, is released upon even mild irritation. Such excitements or mood-fluctuations are the unconscious protective measures adopted for the attainment of peace and of the sense of solitude, which first bring the artist into deep association with himself.

When first such traits of character have become a fixed possession of the personality, have become a real, permanent characteristic, then only can we speak of a

nervous, of a psychopathic, of a hysterical person. In other words, hysteria and nervousness are not indicated by the occasional appearance of psychical symptoms but by biologically permanent symptoms and latent predispositions; they are diseases of the entire person.

Moreover, the benefit or the harm which such personalities produce, plays no rôle. As a matter of fact, Goethe, Strindberg and Beethoven were likewise called (and "proved") psychopathic, as were the murderers Harmann, Angerstein and Grossmann.[1] Of one group, which presents magnified talent, we are proud; the other group, with the lower-than-average talent, and with often unlimited intensification of all instinctive and emotional actions, is combated by us.

The psychopath need by no means be intellectually "inferior;" as a rule even this evaluation disappears into nothing, perhaps, when we consider that there is only one Kant, in contrast to the many inferior, low-valued personalities, while among these same inferior persons there are many who in their own esteem, and even thousands who in actuality, are superior in knowledge, experience and understanding. And is not the disparity in value between an all-round scholar and a professor greater than between a weak-minded farmer boy and an ape with human resemblance?

If we should encounter among musicians differences of usual psychopathic types, we would find that this happens only in accordance with the preponderance of certain mental predispositions and not in general. To

[1] *Translator's note:* Harmann and Grossmann were sexual degenerates who strangled their victims; Angerstein destroyed his home and family by fire.

the observation of the historian only and not to the physician, come the singularities and eccentricities of genius. The medical man will undertake cases only of those who reach not to the edge in their lives and artistic efforts, and those who in their smaller and greater work-conflicts become so dissatisfied with themselves that they need human counsel. Can you imagine that Beethoven and Berlioz would have been treated psychoanalytically? How fortunate that their disrupted condition could be calmed down in artistic work; how much more fortunate that with geniuses of the highest rank (Beethoven and Wagner) discord was sublimated in tonal work! A final notion against a deeper understanding of extreme psychopathic states may be removed: A genius need not be psychopathic.

A single trait, or a temporary inclination toward exceptional states of psychical nature, does not make one a psychopath. In musical character types the essentials of a psychopathic nature are characterized only by a permanent condition, are designated only by the eternal conflicts between the individual and the world, between wishing and doing, between creating and despairing, between professional ambition and discouragement. Genius is an abnormal phenomenon, and in average civil life its entire attitude so remains. Bach, Händel, Mozart, Haydn and Gluck—they will have to be counted as geniuses and not as psychopaths of genius.

Among the portraits of abnormal personalities, which Gruhle has sketched in classical brevity, are several which seem undiscoverable among musicians. In this category are:

Born criminals, vagabonds, erethistic and lethargic persons; rarely the epileptically excitable, regular-drinking and alcohol-intolerant individuals. More often there are:

The innately ill-humored, individuals periodically thrown here and there between desire and apathy, between happiness and grief, the hermits, the eccentrics, the whimsically original, the cranks, the paranoiacs (belligerent defenders of certain reform ideas with the rejection of all criticism), the fantastics, the fanatics, the dialectic and organizing born leaders who through the apodictic formulation of their opinions draw the weaker with them; also persons who are irritably sensitive, sentimental, emotionally charged, playing with suicidal tendencies, the hysterical, with all the variations of transitory singular states, suspicious, constantly offended, never appreciated, and demoniacal.

Sincerity and trifling are frequently associated here, and many an abnormal trait in young musicians is reduced through keen penetration to just a vain, self-complacent and coquettish mania for the unusual, for the striking and for "being different." [1] However, a cap like that which Wagner wore and a resemblance to Busoni do not signify talent; and the tendency to strong spiritual reactions without adequate stimulation does not imply psychopathy.

In a period during which abnormality, even in sexual relations, is considered as a sort of higher degree of the entire experience-complex, we must be very cautious

[1] Refer to my study *Vom Wesen der Musik* (*On the Essence of Music*), published by Püttmann.

in judging as psychopathological, actions that are whimsical, peculiar and of most striking appearance. Legal barriers make our young musicians just as mute and stagnant as other persons of present-day society are made when matters of eroticism and sexuality are involved. Figures and statistics (which, of course, prove nothing) are not at my disposal. But from the physiognomy and from the manner of unconscious sympathetic demonstrations it may be reasonably concluded that homosexual relations among musicians are very frequent.

In the last decades, even between music teachers and pupils several cases of perversity in sexual life have been disclosed. Generally these things occur very harmlessly in places where many young people study, live, think and feel together. These conditions are forms of adoration and fanaticism, of favoritism, of love-letter writing, of artistic admiration and of exaggerated expressions of approbation. Even these, like exaltation and complete enthusiasm, can be confidently regarded as part of the musician's normal ego. The profession which impels one to an extraordinary intensification of mental strain, can magnify psychopathic reactions—overexertion can also do this. Whether (as Adler ingeniously accepts) an organic inferiority (of the hearing apparatus) actually plays a part in pathological cases may remain undecided.

All good musicians have strong sensuous natures; their potestas is intensified and frequently preserved until old age. Among the highly talented (and even among geniuses) sexually perverted characteristics are

frequent; the men seem to have feminine traits and the women, masculine. Here, the road of artistic peculiarity often leads to the destination of human anomaly, to which, furthermore, the esthetic sublimation of erotic sensations approaches with steady intensification. The wealth of the musician's fantasy also makes sexual life appear in a different light from that seen by those who are not artists. (Their polygamous and polyandrous inclinations are proverbial.)

The intensified physical symptoms of emotional life are a principle of character for the musician, just as for the hysteric; in both, the emotions are easily excited and mount immoderately. Now, should there exist at the same time in a musician the condition of fantastic creating, with quick emotional reaction and finished artistry, and the condition of the psychopathic predisposition, then a minimum irritation is sufficient explosively to hurl the sensitive person into a permanent state of the manifest mental disease.

Musical work in itself portends an enormous tax on the mind and imagination, together with a greater decomposition of nervous matter. This tax would be enough to make any musician nervous and to reveal any ready hysteria. A defective mental equipment responds still more quickly to excitement, more intensely to irritation, and refuses to act in circumstances where a normal person is able to release energy toward combating diseased reactions.

Additional brain-work—quantitative as well as qualitative—causes increased blood-flow to the head. Hence

the frequent complaints of head-pressure, headaches and feelings of tension. If the diseased person continues to work, then the activity of the brain ceases. Exhaustion, swooning and depression compel rest from work. Then one easily and conveniently states that the nervous person "cannot" any longer because he "does not want to" any longer; in reality, he "does not want to" any longer because he "cannot" any longer.

This is one of the many forms taken by the process which calms down the struggles between the imagined and the actual world, between endeavor and perfection, between fantasy and reality. This is one of the crutches on which the sick person hobbles over the obstacles lying in the path of his career. The ailing physical functions become symbols of the shattered mental condition; they are the mirrored approach of the external to the internal being. For the spirit "does not stroll alongside the body as a separate entity, but is just another function of the same being" (Dessoir).

The fine impressionability and the sensitivity of emotional life make the musician *a priori,* in both directions of his mood, an extremely far-reaching, elastic and irritable person. Only by sensitive, excessively impressionable individuals can a work of art be created; whereas artcraft work can also be achieved by a pedant.

To be sure, these galvanometric deflections in emotional moods, even of great musicians, often lead to those mixed mental states which are just as close to despair, weariness of life and pessimism, as to the joy of life, optimism and sky-high jubilation. Exaltation

and depression are reactions upon progress or stagnation in creative work; they are also often responsible for the check or advancement of work.

The influence of mood upon the artist's world of thought is indeed trivial. An attack of melancholia can very well be diverted, destroyed or counterbalanced in a happy and joyful work. This is also a self-aid of a creative constitution. In any event, we very often find these periodic fluctuations of mood (cyclothymia, manic-depressive insanity) particularly in musicians; they are certainly constitutionally caused, inborn in nature, but are very differently marked through external factors (success, set-backs, misfortune) in their severity and duration.

The creative person scarcely ever seems inwardly satisfied with himself; and indeed he must not be if he aims for perfection. In order to maintain equilibrium in the balance of his ego, he consumes excessive energy. The greater the personal note of the artist, the heavier is the burdening. Outwardly he must fit his personality into society or against society; inwardly his deep insight seeks to understand himself, to be satisfied with himself and to translate the visions of his fantasies into actual existence. Healthy persons apparently forget that in such cases heroic conflicts must be waged between being and seeming to be.

Remnants of memory and experience of the struggle between reality and unreality adhere beneath the brink of the conscious and are driven into the unconscious. Then there often remain the physical symptoms of disease—tremors, anxiety, heart-palpitation, restlessness

and pain. We do not see the mental grounds. One who regards such physical indispositions as purely physical-organic unconsciously deceives himself precisely as does the diseased person who flees from the conflicts into disease, in order to forget them in an unhappy existence.

Mental analysis discloses the causes of the ailment; moreover, pathogenic obscurity is illuminated by the analysis of dream-life which can be truer and more genuine, freer from deceit, than the life of the so-called cultured person. The sick person cannot adjust his unconscious impulses, emotions, desires and passions to his inner ego; the healthy artist fulfils these claims in his work and often indeed, just out of desires and yearnings which cannot be outwardly realized.

If this important step is not soon made successfully, then there very often follows a new unconscious trick in the battle for the evaluation of the personality. The desire for attention on a large scale is hidden by the more easily fulfilled desire for attention on a small scale. *This attention is compelled by becoming sick;* an unconscious will-tendency creates the foundation for this escape into disease which simultaneously presents a plausible, though also frequently untrue, explanation for failure.

Then nothing more is indifferent and casual; the health-consciousness becomes totally defective, the entire will-power is concentrated in firmly holding to the complaints which boldly conceal the frustration of artistic efforts. Self-observation of trivial disorders increases their volume and form. Headaches, heavy breath-

ing, anxiety, heart-palpitation, sleeplessness—everything is registered and everything is regarded as important and as true which indemnifies for the expression of the spiritually uncompensated.

The torment of the awakened is completed—indeed is coarsened—by the symbolic language of dreams. A violinist before his first concert dreamed that he played totally naked upon the stage. To the analyzing observer, the absence of clothing in the dream signifies nothing more than that the final polish, the last finishing touch and even the elegant toilet of the performer comes off.

Before the performance of a symphony the composer dreamed that, in attempting to enter a carriage moving slowly up a hill, he could not lift his foot, that he could not get into the carriage and that he could not possibly follow the constantly escaping vehicle. A strange person leaped into the carriage and drove constantly farther away and higher, followed by the glances of the frightened, abandoned composer. This also is a typical example of fear in a person as yet "unready"—the symbol language for the obstacles in a "career," for the lack of coherence, for the fruitless struggle with competition, for the hardships in the "ascent."

In artistic life, as in the life of a psychopath, there are thousands of characterological and psychological variations in color of the same kind. The musical profession contains so many conflicting problems, the urge to assert one's real personality and to be valued as truly worthy is so great, and the possibility of becoming prominent among countless talented persons is so small in comparison, that perplexity in evaluating the personal-

ity is frequently inevitable. But those who were not born as abnormal personalities suddenly show traits of psychopathy, of hysteria. The profession has of course released them seemingly without any prepared foundation. But a nervous, hysterical-depressive symptom does not as yet constitute a nervous, hysterical, depressed character, a case of psychoneurosis or a variation of the entire structure of personal feelings, reactions and products of the will.

A fundamental tendency toward a psychopathic personality is innate. Situations which aggravate the struggle in life, often depict as acquired, the entire complex of characterological transformations. Moreover, physical maladies, disappointments and mental anguish hurl the ignition torch of psychical change into the powder-charged tower of inborn inferiority. One may well ask himself occasionally, in view of the many hopeless existences in musical life, whether the irrevocable adhesion to music and the impulsive urge toward artistic creation are not, even in themselves, symptoms of a special, perhaps of a psychopathic, degeneration. And that which we can often establish in character tendencies among musicians of average talent, is frequently that which Jaspers thus formulates for the hysterical character:

"Instead of resigning himself to the possibilities allotted him in life, the hysterical person feels the need of appearing, to himself and to others, more than he is, and of experiencing more than he is able to experience."

One would be almost tempted to interpret, from this inner trend of life, those other traits in dress, bearing,

manner and hair-growth that easily distinguish the outward appearance of the musician from persons following other professions. Like the hysteric who, in opposition to the outside world, strives to seek his own ego, the musician feels helpless against actual life; he is exceedingly awkward in obtaining assistance from people, in the utilization of propitious moments and in the selling of his success.

Good musicians show this trait of seclusion from the world. In part the traditional exceptions are legendary, and in part they confirm the anomaly of that feeling of inadequacy which seldom forsakes the artist and which often sends him flying precipitately to the rescuing bed of neurosis. The instability of emotions, the mood-vacillations, the flaming, eruptive exuberance of fantasy activity, the egotism—which would gladly and indiscriminately bar a rival from the right to life and authority—the obstinacy against being in sympathy with, against being pursued and against being overwhelmed by the trend of the times, also against fashion and material success, and the heightened impressionability (by persons, moods, events, inner impulses)—are all these not the fundamental similarities between the hysterical and an artistic personality? Both types are possessed even by certain fantastic untruths and a suicidal joy in the feelings of listlessness—as well as by the desire to make a striking impression, to germinate a cult by oneself, and, even on a path of troubling consciousness, to bring into accord "being" and "seeming to be."

With the greatest caution, therefore, must one test what is an unconscious means of protection in the

mental anomaly of a musician. In artistic work, which are the established moods and feeling nuances, what is diseased, what is artistically heightened fantasy-life, with all the consequences of will and action? As it is a small step from the characteristic, essential and expression gestures of the playing virtuoso to bizarre, erratically balanced, gypsy-like movements, from the graded correlation of affect to affectation—so also, artistic essentials are closely associated with psychopathic phenomena of expression, excitement and deficiency. Just as the artistic personality develops, so also can psychopathy and an extreme mental state develop, as likewise there can develop and strengthen in life, the deviations from the normal mental type. This abnormal constitution often makes one socially useless; nevertheless it is not an inferiority in the usual sense of the layman.

The psychiatric judgment can by no means be confused with an opinion of social worth. These predispositions in musicians, one can rather be inclined to transfer to the sphere of higher cultural development. Musical conflicting personalities belong more often to the so-called *degénérés supérieurs* than to the *degénérés inférieurs*.

Restless, erethistic psychopaths inclined toward vagabondage and criminality are seldom found among musicians. On the other hand, there are more frequently to be found persons who are unstable, unsteady, unreliable, nowhere settled, striving for change in position and environment; these people change their profession as they change their sweethearts, desert music, fight

their way dependently in an inferior occupation, return again to music, are jacks of all trades but masters of none, willingly thrust themselves into the limelight, create sensations, seek to hit upon grotesque occasions, always have new ideas and, in school and in practical life, are soon known as mountebanks and eccentrics by the solidarity of their opposing colleagues. All these traits are already found in the youth at school. Finally, vaudeville, night-life, parents and colleges take up these broken existences.

Among musicians there are also very excitable psychopaths, easily offended and sensitive, who react coarsely, indeed aggressively and violently, to a harmless word. There are regularly ill-humored, groundlessly unfriendly persons, who suddenly notice that neither work nor pleasure makes things easy for them. They feel that alcohol will produce relief, zeal and courage for work. Instead of these, alcohol increases the excitement and intensifies it in epileptic psychopaths to the point of sickly drunkenness during which they commit impulsive acts and after a long, paralyzing sleep, forget them. Not quite so frequent are those conditions which are often accompanied by purposeless flight—surely not so frequent as regular attacks.

On the other hand, we find more frequently, particularly among musicians, fantastics—those persons gifted with fantasy whose yearning for originality and self-satisfaction presents itself less in a great, newly formed work, in the peculiar coloring of their performance, than in a strongly stressed peculiarity of behavior and of appearance. These are the vain, con-

stantly self-occupied eccentrics, clownishly original, peculiar characters, full of caprices, whims and affectations.

We must also add to the list of psychopaths those young persons who speak like old people, who have read everything devouringly without digesting it intellectually, and who without logical system want to know everything but have not arrived at an understanding of life outside of themselves. These fantastics are more often of the masculine than of the feminine sex; they are suggestible persons who will gladly act as followers to others—persons who pursue the mode to drive it to its extreme. They are original—not because of natural talent, but because of a mania to be striking at all costs. Music with its eternal innovations permits such quickly known and quickly disappearing persons to circle like satellites around a real genius.

Among women and girls, however, those that are tender, shy, and sensitive, like a mimosa, are more usual than choleric and fantastic types. They surrender themselves without restraint to a passion, to enthusiasm and to an ideal; they echo mechanically and they worship; their love-life is of a violent energy and intensity, especially during the period of puberty crisis. Only a few attain individuality, aim and results in this pseudo-activity, which in reality is an erotic self-abandonment. They become the stimuli to creative men, less because of their dormant musical power than because of their womanly qualities.

The mother-complex is stronger in woman than the artist-complex. She inclines—predisposition assumed—

more easily to peculiar hysterical states, to gloomy thoughts, to a collapse in the first conflict with life (as a person or as an artist); she often feels misunderstood and conceals her infirmities under the mask of anxiety, of fear, of heart-throbbing, of insomnia, of hypochondriacal discontent. Without doubt unappeased eroticism, under the present cultural conditions, plays an even greater rôle in woman than in man. The preoccupation with music, the art in highest degree of spiritual states and emotions, mobilizes sexual and erotic powers without calming them. Biologically, woman's inferior creative power in music can be explained by her highest calling, that of motherhood.

Upon the grounds of such and other psychopathic traits, there easily arises, from inadequate irritation, an individual disease symptom. The reason often appears to be a physical exertion, or overexertion, which has been protracted for weeks or months. Least often is the cause a spiritual shock, a psychic trauma, an excitement, an emotion, a disappointment or continuous work in a depressed frame of mind. As has been stated, the mental condition gladly hides under the physical signs of sickness, which are only parallel expressions of psychical infirmities.

It is of less practical importance that the diagnosis of accompanying general symptoms of hysteria or neurasthenia (oversensitivity, reflex-increases, sections of insensitivity, heart-palpitation, hand tremors, indispositions, wandering pains and points-of-pressure pains) leads, according to the attack, to a single symptom dominating the entire picture of the disease. In later chap-

ters, we shall constantly refer to these individual symptoms.

In addition, perhaps, other characteristics of the musician are the nervous glottis cramp, one-sided deafness, the respiratory cramp, hiccoughs and belching, hoarseness, coughing, stammering, the diaphragm cramp, the sensation of a lump in the throat, trembling and weakness of the hands that is akin to lameness, states of tension in the fingers and in the tongue, paralysis of the swallowing musculature and of the soft palate, vomiting and the various disorders of vascular (vasomotor) activity.

One must not be deceived, in diseases which seem to pass as mono-symptomatic, by the far-reaching, dominating, individual symptom. Indeed he who seeks will find all that he desires of symptoms of irritation and attacks in psychopaths and even more in suggestible hysterics. But also, if one examines cautiously, palpates and interrogates without suggestive questions, one often discloses, in addition to the patient's complaints, many signs of a general disease of a psychical nature.

If one excludes cramps and paralysis, as well as the gloomy feelings, then neurasthenia and hysteria border close to each other; indeed they merge. We interpret neurasthenia, of course, as purely a disease of exhaustion and have already discussed in detail its dominating symptoms in the second chapter.

However, let us refer particularly to one of the most common and most disagreeable symptoms of a nervous constitution—fear. Fear may be associated with many other indications of hysteria or neurasthenia; but it can

likewise appear as a separate complaint, as a fear or compulsion neurosis. Fear is the "tense dislike affect of expectation" (Hoche), which is combined with very annoying physical indispositions.

Fear possesses both a physical and a mental complement. Whether the emotion leads to an increase of vascular and secretion activity in the organism or whether, reversely, the physical sensations first arouse the fear (in either case they mingle with fear), is still a scientific dispute. An exchange action between physical and mental phenomena appears certain; the feeling of fear can intensify the vascular and heart symptoms, and the observation of dislike feelings can coarsen them.

Fear dwells, so to speak, in the heart or in the region of the diaphragm, or more seldom in the head. The affect of fear, probably, is caused (aside from organic heart ailments) by an overexcitement of cerebral (bulbar) centers. Since fear is combined with the most horrible expectation of collapse, of dying, of annihilation and of heart-palpitation, we willingly project and localize it in the sections of life's most vital organs—the heart and brain. Sometimes fear cannot be localized at all; it is vaguely planted in the body; it seems to belong to a strange ego which also can be observed.

Fear absorbs all of one's thoughts; it dims all recollections; it hinders voluntary regular activities. The vessels function excitedly, the blood rushes to the head, the hands become cold, the pulse races or slows down, the voice falters, the violinist's bow trembles, the mem-

ory fails, perspiration trickles on the forehead, breathing is accelerated and the secretion of saliva seems to stop. This is the picture of absolute torpidity in fear. Frequently the powerful exertion of the will succeeds in defying fear and its accompanying physical symptoms.

The first moments of an artist's presence on the stage during which he simultaneously comes in contact with unfamiliar people, with his instrument, with the work to be performed, with lighting effects, with noise and disturbing movements—these first uncertain moments, even in confident, great virtuosi, are often associated with fear. They suppress the affect in the consciousness of their superiority—wonder-children know nothing of excitement, emotion and self-consciousness; they play with somnambulistic assurance.

The unassured person, if he is past the border of puberty, finds it more difficult to secure the sense of absolute self-confidence; defective training plus the secret knowledge of one's own incapabilities frequently seem to justify the fear of playing in public. In such cases the psycho-katharsis of Freud would frequently be able to recognize, as the causes of fear and stage-fright, the feeling of being unprepared, of being irresolute in profession and in life, and the entire personal-artistic sense of inferiority.

But important persons also suffer throughout their entire lives from this expectation-fear. When it occurs before examinations, before trials or at a first encounter with higher judgment, it is comprehensible—in prom-

inent individuals, it astonishes us. However, precisely these persons often belong to the mentally weak-constitutional and to the chiefly psychopathic types.

An old, unforgettable experience, perhaps at a first appearance, can embed these ineradicable traces of the artist's fear. Also, the simple apprehension, constantly returning, that something unpleasant might happen, would call forth with lightning speed the feeling of fear in a person of nervous tendencies. He can play for himself only, and also for a small circle of friends, but even the thought of a public appearance at the opera or in concert, gives him uneasiness. The nearer the hour approaches, the more restless, frightened and excited he becomes. At the last moment he declines, or else he sings, plays or conducts in torment.

The feeling that something would fail has become exaggerated and developed into a compulsion-complex. In vain does the affected person intellectually convince himself of his ability; in vain does he comfort himself; in vain does he recognize the nonsensicality of his fear. The fear hounds him, does not desert him. Thus in psychopathic artists do fear and compulsion symptoms pass into each other. Many a career has been wrecked by the fixation of the expectation-fear affect.

In the average nervous person, fear seldom is stamped in such extravagant forms. But the fear of mingling with people, of breaking down during a performance, of forgetting the text, of becoming red and of feeling the sudden necessity to urinate, extends even to completely healthy persons as well as to neurasthenics. However, the fixation of these compulsion-ideas is not com-

plete and not permanent. The untainted musician snatches himself from out of the fear in spite of all reluctance feelings; but the predisposed individual becomes entangled in the set snare and, unless early medical aid is rendered, becomes wrecked by it.

The fact that stage-fright is particularly troublesome to singers and that on the other hand it is more easily conquered by instrumentalists is based upon the severe nervous excitement of the vascular heart apparatus, as a result of which the breathing is also aggravated, accelerated—can in any event be regulated less and less by the will and proper schooling. With the change in the duration and power of respiration—which in inspiration are usually too short and superficial, and in expiration incomplete—the quality of the tone and voice must also suffer.

A mental predisposition is part of every artistic performance. One must also consciously exercise those functions that are subject to the will; one must be at par in motor activity. In mild cases of fear, this control is possible with breathing; however, it is not possible, naturally, with heart-throbbing. Nevertheless, even heart-throbbing diminishes with natural, deep respiration.

And the first few minutes that are endured in fearful nervous tension, do not always have an unfortunate influence on artistic tension. Indeed, there are artists who welcome this expectation-fear; for at any rate it diverts them from technical considerations, removes numerous mechanical hindrances and even transports these artists into a changed condition of consciousness

of the intensified inner participation and inspiration. *This mild fear does little harm to professionals; more serious is the fear of the fear, in the sense of an exaggerated, steady indisposition, settling into the rut of a compulsion-complex.*[1]

In this place we must not forget to stress one more thing. To the concept of psychopathy there clings the disparaging reputation of decadency, of degeneracy. The discussion of this will be only in a purely medical and not in a cultural, artistic sense.

We should not hold to the false belief and judgment of value, that mental inferiority is necessarily associated with creative inferiority. All is not decadent, all is not degenerated that is not directly understood in art. And many a musician who in his time was regarded as even insane, was exalted to godhood only a generation later.

From the ranks of psychopaths with their increased sensitivity, with their great responsiveness to new movements, with their strong excitability to emotional power, with the fascination of their expression movements, with their fanaticism in creation and in the impulse toward the indefatigable personal formation of the inner being—from their ranks develop leaders, creators and geniuses. Moreover, mental abnormalities and artistic effects are seldom so strongly blended perhaps as in the demoniacal, misshaped, bizarre-craving and wildly shrieking work of a Berlioz. Usually nothing can be observed in the works of psychopaths, indeed

[1] Self-pacification, suggestion by a physician and auto-suggestion according to the method of Coué, now often render good service. (Cf. chapter VII).

of psychotics, that is diseased in emotion, in expression and in instinctive life. (Schumann, Wolf).

Mental abnormality does not create, but neither does it hinder, the accomplishments of genius, which in fact, in a biological sense, represents an overnormality. Through the diverse lights of the types of natures, of characters and of the reaction possibilities of psychopathic personalities, there even glimmer the unusually endowed values of personality. Normal and pathologic, healthy and diseased—nature understands transitions and flexible boundaries, but no laws and no "absolute" of a mental nature.

An artist's status in either the underdeveloped or the overdeveloped category is decided by his work and not by an enormous amount of pathological traits in his nature, manner of living and character. By reason of a single creative deed the worst psychopath becomes a constructive genius; and despite a legion of unfruitful endeavors the healthiest and strongest mentality becomes an unproductive dilettante. The individual distinction of artistic persons usually results independently of their mental abnormalities, or against their pathological adjustments in existence.

The genius must be possessed, must be driven and rushed, by invisible, obscure demons, by subconscious, gloomy premonitions; before anything there must be the instinctive yearning for the as yet unaccomplished. The genius, in his urge toward the morrow, is far distant from the insane person, in his returning to yesterday. An illusion can also be creatively effective, when it comes to the point of actual credibility.

The passive suggestibility of the mass can, as Bonhoeffer expresses it, actively oppose the psychopathy of the leader. Thus, from the struggles and achievements of self-willed psychopathic personalities can arise revolutions, musical style, and the creative fundamentals of music.

And not far removed from these marks of peculiar personalities and yet surpassing them in their impulses, manias, passions, in their powers of experience and achievements of the will, and in their struggles for appreciation and against opposition, are ranged the artistic characters. Here the diseased manner of life is often fused with the characterological, the firmly united and the inexorable factors of artistic aspiration, into a wonderful Whole. The pathological trait in civil life now signifies nothing as against the creator's conversion of such traits in a work of art. In such cases—perhaps Berlioz, Wagner, Scriabine are instances—the pathological will no longer be felt as diseased, even when its beams intrude into music. The nervous and pathological qualities are absorbed in the steady, systematic growth of an artistically developing personality. Life and art, social and artistic achievements, are separated. A passion, a depression, a mental attack, excitement and an overwhelming condition, may all be negative worths of existence in a person and as such they may repel us. But in the world-viewing character of a creative or interpretive artist, these experiences may be transmuted into valuable, necessary, undying, great and productive achievements.

CHAPTER IV

THE OCCUPATION-NEUROSES

1. General Survey

THERE are in violinists, cellists, pianists, flute players and drummers certain nervous disorders of the muscular apparatus of the arms and hands that are known under collective names as "profession-neuroses," "occupation-neuroses," and "occupation-cramps." According to the precedents of Benedikt, it would be better to say "coördinative occupation-neuroses." The disturbances, which are well known to professional musicians as tormenting, present an extraordinary difficulty in their treatment.

Both in literature and in practice many instances are known in which the career of a talented person, because of these difficulties and impossibilities of the hand-mechanism, was interrupted for a long time or even had to be abandoned. It is noteworthy—and this will lead us later to the causal explanation of the phenomenon—that this ailment affects only professional players, hardly ever mere amateur musicians, even though they may practice ever so industriously and intensely on their instruments.

It is a problem not, as the word seems to indicate, of cramps of a usual nature; that is, convulsions of the muscular system—at any rate, not preponderantly and exclusively so; when, on the whole, one speaks of

cramps, this can designate only the tonic, continuous muscular contractions and not those interrupted by convulsions. Weak conditions, symptoms of fatigue, tremors and pains also exist just as frequently as these cramp-like muscular contractions. Either all of these complaints are simultaneously present in a profession-neurosis, or else one symptom overwhelms the others to such an extent that, when isolated, it dominates as the disease.[1]

According to the experience of all observers, both physicians and artists, coördinative occupation-neuroses fall into pathogenic (*i. e.* in compliance with the cause of the disease) uniform disease groups and, morever, the symptoms appear in those coöperating muscular groups that are specially exerted in certain exercises. The nature of these symptoms manifests itself in the hindering of the synergetic muscular functions, which are necessary in exercising particular touches and run-passage movements of the fingers.

The motions which now gradually reveal the disease picture of the neurosis, are not simple but complicated and artificial ones—at all events, not such as can be made without further ceremony; that is, not such as are identical with the physiological functions of the musculature. Movements which are necessary to every person's normal living capacity and have been habitually made since his youth, never lead to neurotic troubles. The muscular movements to which we refer are mani-

[1] Woldemar Schnée's opinion that the player's cramp represents the last and most difficult stage of professional disturbances, is empirical and scientifically false.

foldly composed and combined with one another in the nature of the movement; stretching and bending, spreading, supinating and pronating are uninterruptedly alternated. Therefore the question concerns a technique to be learned and practiced, and the direct, most important cause of all hand and arm complaints, among practicing musicians, is a systematic exercising, not suited to the individual's constitution.

It is known that no musician acquires a technique without hours and hours of study; that in the beginning of an artistic career the study is merely mechanical; and that in its progress one must also have a recapitulating memory for technique. These technical exercises gradually become a fixed possession of the individual, and it is precisely this property which is harmed in the musician if the limit of practicing is once exceeded to the point of diseased reaction.

The muscles of the arms and hands are not the only ones which can thus be injured in the profession. In female and male dancers there is an occupation-neurosis of the leg muscles. The occasionally observed oblique position of a violinist's head (torticollis) must likewise be regarded as a motion neurosis of the neck muscles. Here also it is really a matter not of a single muscle but of many muscles coöperating in a definite manner firmly to hold the violin between chin and shoulder.

It is very characteristic of all the named symptoms that they generally appear only while playing and affect the innervations of the muscle needed in playing, and

that during resting and pauses in work the complaints almost immediately disappear. Particularly the feeling of fatigue first appears after a certain period of practicing; and simultaneously with this sensation of heaviness and fading-away there appears a pain which, in various special branches of the profession, can attack in like manner the hand, the forearm, upper arm and shoulder, and often also the legs. The pain, to be sure, frequently continues even after the cessation of work.

Any work of which these same muscles, sinews and joints are capable, except that of the systematically practiced, complicated combination, can be performed by the ailing person. It is therefore quite possible that a pianist who gets a cramp in his fingers after ten minutes of playing or a violinist who after the same period feels pain in the bowing arm and fatigue in the left-hand fingers—it is absolutely possible, that these persons can play several consecutive hours of tennis or row or do gymnastic exercises.

Thus the problem is concerned with a specific difficulty or hindrance of certain muscular activity, which immediately stops with the commencement of another, no less difficult activity. This observation has undermined the most convenient medical opinion on these processes, namely, that the problem is concerned with an inflammation of the nerves. If also it cannot be denied that occasional pressure sensitivity of the nerve stems and muscles—in fact, even a minimum of pain with pressure on bones and joints, as well as muscular hardness—can be established as the signs of local contrac-

tions, then a general organic reason cannot be viewed as the cause of occupation-cramps in accordance with the present-day position of our knowledge and observation.[1]

That the problem does not involve a question of a peripheral inflammation of the nerves is indicated by the fact that, in the region of the possibly affected nerves, we never meet with attacks of sensitivity (sensitivity to touch) and also that there are no electrical disorders present. Then too, one must also assume that persons who, so to say, constitutionally suffer from accumulated inflammation of the joints, muscles and nerves, would also be attacked by a profession-neurosis, through special activity as a musician. But in reality this is not the case. There are insignificant minor changes of an objective nature found in the hands of pianists as a result of overpracticing. These include distortions, myositis (muscular inflammation) and periodically appearing, neuralgia-like pains. But in view of their extraordinary rarity these can be regarded merely as secondary, subordinate symptoms and not as integral parts of a neurosis. Furthermore, these organic accessory symptoms, among which perhaps the oversensitivity of the skin is yet to be included, are more seldom found in violinists and cellists than in pianists. Perhaps this may be connected with the fact that string instruments are better adapted to the player's hand than the

[1] Schnée's differentiation between inflammatory and trophic disorders is founded upon a physiological error; scars after injuries cause complaints but not profession-neuroses. Ganglions are found just as frequently in players as in those who do not play.

less personal and less individually constructed keyed instruments of pianists and organists.[1]

If pains, strains and indispositions are also present during pauses in work, then the diagnosis of the profession-neurosis must be revised. In that case an inflammation of the nerves is more probable.

Bates observed in a stenographer and in a violinist that the complaints were greater in the morning than during the day—that is, the pain was worse before than during and after the work of writing or of playing the violin. This circumstance contradicted the existence of a functional neurosis. An accurate anamnesis proved that both patients slept with their arms crossed under their heads; therefore, the complaints were caused by the pressure upon the nerve-stems of the arms. Hence the ailment was double-sided, and it disappeared entirely after the unnatural position was given up. I have observed a woman pianist who had a complaint of like nature and who experienced the same success in healing the traumatic neuritis (inflammation of the nerves through pressure).

Generally nature has ways and means for curbing organic injuries which are conditioned through professional activity. It happens that when young players place their fingers on the violin, they feel pain in the finger tips similar to that of cellists when they practice the thumb position for the first time. These pains

[1] Every hand must be equal to the demands of playing with respect to strength, elasticity and suppleness of the muscular and ligament apparatus. Herein lie the success and the benefit of Schnée's arm and hand training (as a prophylactic). Of course, whether through just this, a far greater majority of music students are saved, is withdrawn from my calculations!

appear in the second to the fifth fingers of the left hand through constant friction with the strings, and in the fore and middle fingers of the right hand through pressure upon the bow. Here, in fact, the condition can be a matter of the constant pressure. Consequently, the appearance of a mild traumatic inflammation of the skin nerves (neuritis and perineuritis) may be expected. These complaints do not last very long because the epidermis, the most superficial layer of the skin, as a matter of protection from pressure usually hardens till it offers a corn-like resistance. Every pressure is thereby mitigated, and to every attack on the nerves a protective cushion is opposed. These skin-hardenings are seldom painful; however, if they should be, the pain is probably caused by the ingrowth of the smallest terminal fibrous separations of a little skin branch in the hardening.

If we disregard these causes of complaints in professional musicians—which as already stated are seldom purely peripheral—then we are forced to acknowledge that the cause of profession-cramps is peripheral only, in the sense of the release of the condition. But the central nervous system, which must be viewed as the main seat of these neuroses, plays the leading rôle in the entire complex of neuroses. We know that in the brain there is a center for the coördination of our movements. Now in former times it was assumed—and Romberg's authority is influential in this view—that correctly guided movements during practice could act as a reflex-irritation upon the brain and could arrest the coördination of the nerves and muscles through a real

cramp. One must accordingly interpret the player's or writer's cramp as a reflex cramp which is released through peripheral irritation (as perhaps a large scar on the leg or an ailment of the lower organs can, through the reflexes, release cramps). In opposition to this view, which assumes a peripheral organic change in the muscles and nerves, is presented the deficiency of actual objective peripheral symptoms.

There has been another theory that the cramps may be concerned with an anatomical disorder situated in the brain or in the neck portion of the spinal cord, seat of the coördinative centers. But for that purpose it would be necessary to observe not only the balking of an individual muscular function or of associative muscular actions but also disorders of movement and sensation in the rest of the body. Herein lies the accuracy of the opinion that the impulse toward innervation of diseased muscles, as generally every innervation, originates in the cerebral cortex.

Therefore the actual base of the disease must in fact be the brain. There must be an organic or functional central change which eventually becomes released through peripheral irritation. With entirely normal persons of sound nerves, but more quickly and intensely with persons of unhealthy nerves, the extraordinary increase of peripheral irritation, as is given by hours of practice, can as a matter of fact manifest itself in the overirritation of the central sections, and the condition of abnormally intensified irritability in the brain can, through the cramp condition, compel rest, fatigue and exhaustion. Thus also at this time nature or the or-

ganism of the individual appears to be able to suppress the unbeneficial overexertions and abnormal activities.

In spite of Burckhardt's proofs that conductive disorders in the peripheral nerves and muscles must be present in professional neurotics we must to-day be freed from this peripheral focusing and in a functional ailment of the coördinative center we must perceive the most essential cause of these disorders. The irritations of movement processes are felt with abnormal intensity and thereby those centers become even more irritated.

The pain of fatigue that appears during practice is not a pain in the sense of a nerve inflammation or of neuralgia. Diseased persons describe it more as a lasting, unpleasant sensation of heaviness, of exhaustion and of fatigue. As a matter of fact, it appears to be only the sensation of a tiring musculature, to which then, of course, there is also gradually added a psychical dislike for playing, which now, in its own turn, first really hinders the performance.

The more we imagine an overirritation in the coordinative centers and, in the course of months, the appearance of fatigue, we can theoretically assume, the more appear, from a definitely directed will-irritation, an increased innervation, a tension, a cramp in the hand muscles or an undesired relaxation, enervation and fatigue. Between the cramp and fatigue, we would have to insert, as the connecting link, that condition which signifies the incomplete tonic cramp and the incomplete indolent balking of the muscle, namely, tremors.

The close relation between profession-neurosis and

tic has often been pointed out, for example by Williams; I myself have frequently seen them together. Both appear to be homogeneous central disorders of originally desired motion-complexes—both are pathological automatisms. Williams regards as the cause of this, the faulty emotional stress on certain muscular coördinations and connected with this the feeling of reluctance.

An ingenious theory, which is thoroughly explicable by the clinic and which almost meets our approval as materially correct, was developed by Exner and acknowledged by Edinger (and is associated with Goldscheider's physiological train of thought). According to this theory the motor cells of the spinal cord become charged with sensitive receivers, with the result that there follows a discharge, if the receivers have become too strong and great, or if, from the other side (perhaps the cerebrum) of the charged cells, new irritations enter. These additional irritations (Exner), even if the individual irritations are slight, can supersede an enormous original irritation. For, in order that an irritation be released, an excitement must be of decided magnitude; it must not remain under a certain irritation limit. With movement combinations, such as are found in every manual-artistic work, there are included cellular complexes of the spinal cord in functional tension and in activity. Now, in neurotic professionals, according to Benedikt, the central organs for coördinative motions are in intensified excitement (perhaps better stated: in a ready response to excitement). Should sensory skin, periosteal, muscular irritations and pe-

ripheral will-impulses set in centrally, then arise cramps, or the feeling of cramps.

This theory is attractive up to one point. One does not find, as the old master Edinger states, constant "peripheral lesion" in nervous disorders during writing and playing. On the contrary, hardly ever are changes found in skin, nerves and muscles, nor are electric changes found. The centripetal irritations must, therefore, always be much smaller, more irrelevant than the centrifugal ones, issuing from the brain. Our experiences speak in a body for the overvaluation of the last irritations—also as far as we interpret them as being psychical-functional.

2. Causes

It has already been emphasized that every musician may be attacked by a neurosis in the above-named sense; nevertheless it is striking, in view of our acceptance of a *central functional disorder,* but comprehensible, that most musicians who suffer playing cramps are pronounced neurasthenics. The thought cannot often be suppressed that these nervous disorders are only part of a total neurosis. This ailment is rarely seen in persons over thirty years of age—which can be explained by the fact that professional chronic suffering, such as occupation-cramps, prevents perseverance in the profession. The female contingent subject to the disease is greater than the male. Those young persons in the profession or high schools and conservatories can show not only their chief complaints but usually even such of a general nature. States of fear, stage-

fright, irritability, migraine or constitutional headaches, symptoms of vertigo, insomnia and general fatigue are in the order of the day. Many of them are physical weaklings, anemic and undernourished. With men, alcohol also seems to play a causal rôle.

I have hardly ever heard an ailing person say that an accident was responsible for the disturbance. And as a matter of fact, among the thousands who received severe injuries in the war, I have not met a single one—even among musicians—who, in consequence even of a local trauma, would have revealed the characteristic symptoms of fatigue, paralysis or pain while playing an instrument.[1]

Occasionally several individuals in a family were attacked by the same disease, which indicates not only the relationship of the disease to a neurotic predisposition, but also perhaps a psychic susceptibility to infection. There is no doubt that mental influences, especially naturally unpleasant experiences, can transform occasional symptoms of fatigue in professional players, into chronic, systematically fixed neuroses and completed diseases in consciousness.

Frequently the disease sets in from a mental shock; the diseased often specified, without being questioned, that a mental condition of exhaustion was the true cause of their disorders, especially when the duration of their practicing has not been abnormal. Thus I witnessed the appearance of a professional neurosis in a woman pianist as a direct consequence of her broken

[1] Such a rare instance of an injury to the end-nerves of the thumb (through a sudden fall) with resulting disturbances in playing was observed by Julius Flesch. (Personal communication.)

engagement, and in a violinist, as the result of failing in an examination. These psychical components, which are almost always present, must never be neglected either in connection with the cause of the suffering or, especially, in the course of treatment.

It is also probable that feelings of dislike, combined with studying for a livelihood, and the difficulty of getting a position, can become dangerous factors in the outbreak and the duration of the disease. When this burden vanishes, then musicians no longer play only with the purpose of practicing and playing, but also with the exalted feeling of mastery over a useful and profitable accomplishment. Then too, under this new mental tension the complaints vanish more quickly than in schools and conservatories.

Never is it superfluous, in order to fathom the cause, to ask with whom the diseased studies. Unfortunately there are, especially in large cities, institutions breeding professional diseases; there are so-called teachers who have not the slightest conception of the physiological movement-processes, and—what is of greater gravity—instruct their pupils according to their so-called methods and do nothing for the relaxation of self-developing cramps, but do everything for the production of tonic contractions and fatigue pains. Sometimes then it is sufficient to send such a pupil from a poor teacher to a good one; and in fact there are pedagogues of rank with whom, even in decades, not a single case occurs of a profession-neurosis through methodically false innervation and coöperation of muscles.

Nevertheless, even the best teachers sometimes do not

realize the important consequences of their practice exercises. Even if we take into account predisposition, constitution and psychic trauma we must still regard overexertion as the principal injury to the nerve-muscular apparatus when an occupation-neurosis appears.

When, with equal talents, with the same method of playing, and also with the same amount of daily practice, only one pupil falls ill while fifty others do not, we have a definite and effective demonstration that a predisposition must necessarily exist. But this predisposition is not perceptible in all cases—not even to the physician without further details. Rather he first infers, —reasoning from the succumbing individual to the disease under preliminary conditions and reasoning further from the fact that the others have not received harm—that the now diseased individual must have been predisposed.

Nevertheless, overexertion should be a constant warning to all pedagogues. It should be avoided as much as possible even with powerful persons who impress the observer as being strong-nerved. Of course, overexertion is a relative term; but in continuous, uninterrupted hours of practice there always lies the danger of overexertion. The danger becomes all the greater when fewer pauses are introduced. Practicing for hours at a stretch would have greater weight in causing disorders in playing, than the practice duration of six hours, consisting of three two-hour periods, separated by one-hour pauses.

Indeed, practicing has not only its pedagogical value as the truest firm basis of every artistic career. It is also

necessary for the grinding-in of certain definite brain tracks and for their self-evident motor terminations. No artist can truly create artistic work without freeing his mind from technical details, without automatically controlling the purely mechanical playing. Intense practice is essential for this purpose.

In former years, no value was placed upon the contents in technical exercises. Modern pedagogues rightfully teach that, even in étude-like exercises, the significance should be revealed; the mental participation must not be entirely eliminated, even in the continuous playing of runs, chords and other exercises.

We know how strong mental influences also inaugurate professional disorders; hence, most likely, indifferent strumming without inner emotion plays a greater part than we, until now, realized in the etiology (science of causes) of profession-neuroses. With this there also seems to be connected the fact that the most ardent hobbyists of the piano and violin, who do not pursue their art professionally, thanks to their devotion to the instrument and its possibilities for expression, virtually always remain spared from professional disorders.

It is known that individuals with profession-cramps lasting for months, suffer spiritually to an extraordinary degree. As is generally known, the career is indeed at stake. This fear of the future and this manifested depression in turn act upon those symptoms in the muscles which the depression has aroused. In reality, the more frequently this extraordinarily vicious circle occurs, and the longer the physical affliction continues, so much deeper becomes the indisposition.

Sometimes, to be sure, the indisposition is not the result but is the cause of the suffering. This mental alteration is more frequently established than disestablished; and it is a question usually of a sort of self-understanding, of a feeling of inadequacy, of the feeling that one's progress does not correspond to his ability and aspirations.

Up to a certain degree every individual can, indeed, acquire technique. As soon as it emerges, or should emerge, from the mechanical sphere into that of artistic penetration—then the ascent is determined not by will power and by the duration of practicing but by talent.

Students often lack the insight into the degree and depth of talent; and often even the teachers themselves, through indelicate, unadapted discourse with the pupil's psyche, deprive the pupils of the most essential factors for profitable work, namely the motive and the joy in work. The fear of doing something wrong, the dread that one is unable to satisfy the increased demands, the expectation of performing before an audience and the feeling of being overconfident can, in sensitive persons, mount to such an extent that a physical weakness of the muscles results, which then represents nothing more than the physical expression of a mental infirmity. Also, self-overrating, a tendency toward emotionally stressed actions, timidity and peevishness play etiological rôles here.

With a really inferior talent there is no harm, if the unconscious nature of the player acts more prudently than the conscious thought production. But where talent exists and the feelings of inferiority are unjustified,

there a psychologically thinking teacher can nip a profession-neurosis in the bud.

According to Wiener's theory, certain forms of occupation-neuroses, chiefly of writer's cramp, would arise from a sclerosis (calcification) of the peripheral vessels or from the attack-like appearance of vasoconstrictions (vascular contractions). In that, he perceives a parallel symptom to angina pectoris, to the heart attacks of the arteriosclerotic sufferer.

This theory is wholly unsubstantiated and is a perplexing thesis in the spasmodic search for peripheral organic causes. The complaints of neurotic professionals hardly ever seem to be in the nature of an attack as, nevertheless, they must be in the spasms (contractions) of the vessels.

Also, the regular concurrence of work and disorders is not considered in this vascular theory, and it is also observed that the fingers and hands of the afflicted persons are by no means cold, discolored or pallid, but are outwardly unchanged, with good blood circulation, and warm. For our investigations, therefore, this false theory is already eliminated since we constantly deal with young persons.

Whenever I had the opportunity to measure the blood-pressure, I found it was occasionally normal, occasionally higher (150–160). But this was not caused by a change in the vascular walls, but by hypertonic conditions of a nervous nature. A couple of hours of rest, and the blood-pressure was again normal (my personal observation).

With the very rare, purely sensitive form of

occupation-neurosis, which preponderantly manifests itself in itching, stinging and formication in the finger tips, one can, following the precedence of Houillon, certainly think of a sympathetic neurosis—that is, a vascular lability (oscillation) produced by sympathetic irritation. The resemblance to acroparesthesia (discomfort in the finger tips) is outwardly great; often, a harmless mechanical procedure, such as dropping of the arms or a brief immersion in cold water, is sufficient to remove the complaints.

3. Violinists' and Pianists' Cramps, the Symptoms of Writer's Cramp and Other Occupation-Neuroses of Musicians

The most commonly known form of all coördinative occupation-neuroses is writer's cramp (graphic spasm, and mogigraphia). *It demonstrates the subjective and objective symptoms of all diseases of overexertion, which to the present day belong to pure culture.* All that can be said here concerning the development, form and intensity of disorders also applies to musicians' cramps.

Among professional musicians, to be sure, the writer's cramp is not very frequent. The principal class attacked by it is the group of professionally writing persons—that is, authors, editors, secretaries, etc. Nevertheless, writer's cramp, for special reasons, is also part of the occupation-neuroses of musicians, since the musical author, the music critic and the composer may be afflicted with it.

That it happens much less often than would be expected from the quantity of written matter (one should have in mind the gigantic modern scores from Wagner

to Schreker or Stravinski) lies in the fact that the emotional participation and the high mental tension during creative, active writing do not permit the appearance or observation of overexertion in the exercised organs. A copyist falls ill sooner and more easily than an original writer; a person who takes dictation is sooner ill than one who records his own thoughts. In other words, here also the psychic component, the personally concentrated interest, has an important influence upon the purely intellectual.

The subjective complaints of writer's cramp and similar conditions are: Quick fatigue, paralyzation of the hand muscles, discomfort (paresthesia), pains and tenseness in the hands and upper arm and tonic contraction of the musculature. The complaints are often concentrated in the hands, but not seldom, they also are drawn through the whole arm into the shoulder. A poor manner of writing is, for example, that incorrect method in which the pen or pencil is held with intense strength, or in which the little finger rests upon the paper while only the other fingers move. These poor methods can often be responsible for the origin of the writer's cramp. The remaining causes have already been specified above. Now let us once again refer to the releasing effect of the psychical change and to the possibility of a reciprocal infection (through psychical induction).

The significance of injuries to the hand or of inflammations is very trivial. Several nerves and their muscle groups always participate in writing disorders—particularly the small muscles in the balls of the thumb and

little finger—and in addition the flexors and the extensors of the fingers running between the elbow and the wrist, as well as the pronators and supinators. Frequently the disorders spread up to the flexors and extensors of the upper arm (biceps and triceps), and also up to the shoulder-levator.

The symptoms develop gradually. While in the beginning the inability to write is noticed after perhaps a half hour, it may happen in due course if the ailment is neglected that even a few lines—indeed, a single word—is sufficient to stop the process of writing.

There is, as a matter of fact, a cramp-like form of the writer's neurosis (so-called spastic form). Through this, the flexors of the thumb and the index finger are excessively strained—sometimes so violently that the thumb falls into an opposition state and is drawn into the hollow of the hand, while the rest of the fingers are spread out and no longer hold the pen firmly. Thereupon the cramp extends to the forearm, the hypertonia (overexertion) of the extensors simply lifts the wrist into the air, and the writer, not without special effort, forces the pen to the paper.

In other cases, the flexors of the first three, or of all, fingers are cramped so severely that the pen, against the writer's will, rigidly adheres to the paper. Under these circumstances, peaceful writing no longer proceeds, but merely a scrawling and a scratching—a boring of the pen into the paper. Indeed, although rarely, it is observed that the hand is twisted, especially in the direction of the small finger.

The cramp can thus be extended from the hand into the forearm and upper arm, and every single one of these functional disorders aggravates still more the normal, dependent-on-the-will guidance of the hand. Also, the individual groups of cramping muscles can alternate with each other. However, almost every one who is subject to writer's cramp has a single, special, "pet" sort of the cramp condition, a specific form of the ailment as it were—that is, either the spreading of the fingers, or flexor contractions of the first two fingers, or extensor contractions with raised hand.

This spastic form is the most frequent. In moments of the cramp's suspension, writing a few characters is always attempted again; the observation of the process renders it still more difficult. In order to get the pen under control, the pen-holder is clenched with even more cramp-like force, or, if need be, grasped close to the point; the downward strokes are made as heavy as possible and, after a few characters, pauses are constantly inserted, so that now the individual words make a completely severed, interrupted and irregular impression. With the characteristic personal handwriting, the discussion is by no means concerned.

Rarer than this form is the tremor form. Even before the afflicted person writes, there appear oscillating agitation and trembling movements in the fingers; the paper is sometimes touched by the pen and sometimes not, so that the script becomes restless and undulating, and, as a rule, a horizontal line cannot be maintained precisely. Very often the attempt to suppress the

tremors leads to a spastic contraction of the muscles, so that both these forms can supplement, dissolve and displace themselves.

Yet more seldom does there appear the paralyzed sensation without cramps and tremors. After several minutes of writing the hand and pen sink loosely down upon the paper and the feeling of fatigue connected with pain, expands. A paralysis, or even a paralytic-like debility, of an organic nature does not exist here; for the affected person, even in the condition of this local tiredness, can immediately recommence exercising in another actually more strenuous activity. Particularly in these forms of paralyzation during writing, one is tempted to place the responsibility for the cause, not so much upon the writing action itself as upon the dislike for writing, the fear of writing or other mental influences.

There are cases of writing disorders in which, even after the cessation of work, these fatigue pains still continue; indeed, as in similar disturbances among pianists, the persistence of the pain sensation is especially frequent, and, during examination, occasional distinct positions painful to pressure in the nerves and muscles are found. Without its being, as already mentioned, a question of an inflammation of the nerves or neuralgia, this form of occupation-neurosis has also been designated as neuralgic.

Scientific observations upon writer's cramp exist only since the middle of the nineteenth century. Therefore it is not fitting to point out that there exists a connection between the sickness and the introduction of the steel

pen in 1830. It is also not at all rare, and is important for the treatment of the disorders, that the transition from pen to pencil writing can instantly improve or even remove the disorder.

Actually more men than women are affected by writer's cramp, according to many statistical statements. In a Congress lecture, Frankl-Hochwart declared as early as 1912 that writer's cramp is confined almost exclusively to men from twenty to forty years of age. That has changed, since the greatest contingent of professional writers, stenographers and steno-typists is today supplied by women. The profession-neuroses among typists, though infrequent, have added to the store of disease knowledge of that time.

The most susceptible age for the manifestation of the disorders seems to be the third and fourth decades. Before the twentieth and after the fiftieth year they appear to be very rare (Bernhardt, Alexander and others). The occurrence of similar cramps, tremors and pain symptoms in typewriting is, again, more frequent in women.

Attention has been drawn previously (Seeligmüller) to the fact that calligraphists, or individuals who strive for an especially beautiful handwriting (that is, bookkeepers, office clerks, commercial persons, secretaries, etc.), are much more inclined to writer's cramp than persons who are indifferent to the beauty of writing. Scholars, physicians and lawyers with their well-known poor and careless handwriting, are, on the other hand, despite the writing of voluminous works, more immune to nervous writing disorders, and it is almost as-

tonishing that giants in writing, as Balzac, Dostoiewski, Goethe, Strindberg, and also Wagner, Vischer, Ranke, Gervinus and others, were not attacked by writing disorders.

If it is firmly established that a nervous predisposition, either innate or acquired, plays a great rôle as an etiological factor, then also it should not be denied that, in very many cases, such a sign of predisposition cannot be proved. The conclusion must then be drawn that the succumbing to the disease in itself should be regarded as an indication of a predisposition. On the whole, one may say that the objective symptoms of writer's cramp and similar conditions are absolutely negative; only the symptoms of general nervous overirritation or of fatigue are nearly always traceable (intensification of sinew reflexes, of mechanical muscular irritability and of vasomotor activity, tremors, dermographia and others).

The sickness is a protracted one; indeed it may be incurable, lasting to the end of life. That overexertion may not be regarded as the only isolated cause of the severe disorder results also from the last observation, which demonstrates that persons, even after months of rest, still retain the disorder, and that the attempt to write with the hitherto quite inactive left hand, after a brief period is likewise followed by the appearance of writer's cramp.

The physician's outlook upon the disease must therefore never be a purely material or local one; on the contrary, the entire personality, above all in its psychic behavior, and its peculiarities must be the starting-point

of all observation and treatment. I regard it as quite possible that pure psychotherapy, in the form of calming the writing fear, has better, more emphatic and quicker results in effecting a cure, than mechanotherapy.

But even when local treatment and a general psychic influence proceed together, one is never safe from relapses. The more prominent the affect of fear, the more definitely the writer's cramp represents a psychical ailment, and thus the more favorable is the prognosis. In general this prognosis must unfortunately be designated as extraordinarily unfavorable in writer's cramp; it is substantially more so than the prognosis of the corresponding neuroses in musicians.

The subjective indispositions of playing neurotics have already been described in the general section of this chapter. They are only variations, only differences in degree and not in essentials—whether the one complains more of the seemingly forced pressing of the fingers to the keys, of finger-slipping, of the cramping-together or automatic encroachment of the thumb, of the feeling of insecurity, of weakness, of lameness, or of pain and burning. All these are differently complained of, stressed and shaded; but the core then remains fixed and unchangeable in a single one. These observations can also be made in relapses after many years. One, who in playing has once felt tension and weakness akin to lameness, does not become afflicted with "unbearable" pains—and *vice versa.* The picture of the first neurosis in playing returns with photographic accuracy (which the central recovery still more clearly explains).

Certain finger predispositions of a muscular or tech-

nical structure nature may be influential. I have repeatedly seen, in women pianists and in a cellist, abnormally short fingers with unproductive joint-excursions which certainly facilitated the appearance of playing disorders. And, in a pianist instructed in a very good method, I was able to establish an isolated weakness of the second and third interosseus muscles (muscles between the fingers) of the left hand. His complaints completely coincided with the discovery of this condition. The motor strength of both these muscles was just as good in comparison with those of the remaining fingers in the same hand—as it was essentially reduced in the same fingers of the other hand. Even electrically, a quantitative irritation difference was traceable. Medico-mechanical individual exercises brought improvement and finally cure.

That which has been above stated in regard to writer's cramp applies, *mutatis mutandis,* also to the occurrence of complaints in the professional activities of pianists, violinists, cellists and flutists. Quite rarely are those artists afflicted who are already in public professional life—those virtuosi who for months, evening after evening, master an enormous repertoire and in addition are in the habit of practicing for hours during the day. On the contrary, the suffering is common among students and among the pupils at conservatories and high schools. Women are in the majority. With pianists, the right hand is generally attacked, rarely both hands, and almost never the left hand alone.[1]

[1] Whether this is also the case with those who are left-handed, I do not know.

The cramp-like muscle contractions, the stretching of individual fingers, the forced raising of the fingers from the keys (similar to the specified disturbances in writer's cramp) are less frequent than enervation, fatigue and pains. Indeed, the pain can absolutely dominate the picture of the disease and can really either conceal or prevent from coming to consciousness the symptoms of lameness and cramp. For the pains in the hand, arm and shoulder are so intense that further practice is unthinkable, so that the various tensions and relaxations of the muscles are no longer observed.

With writer's cramp, as generally with all professional disorders of the same nature, the motor power, measurable in resistance movements, lifting and carrying results and dynamometrical pressure, is normally good (fifty to eighty kgs.). The curve of fatigue does not set in much sooner, and the fatigue also does not last much longer than in the average nervous person. Objectively, a general hyperreflexia (intensification of the sinew reflexes) is usually encountered—seldom a more considerable pressure sensitivity of the nerve stems.

Particularly in professional writers, ill-humor, chronic discontent and acute vexation along with overwork can be established as the causes of the disease. Almost always the affected persons are innate neurasthenics and psychopaths fundamentally.

Characteristic of the singular selection of balking muscular synergy in writer's cramp is the observation of Frankl-Hochwart, who mentions it in two persons suffering from writer's cramp; one, an excellent neurological surgeon, the other, a prominent piano virtuoso. The

reverse also occurs: I know a violinist who daily practices six hours without complaint, but who, after a half hour of writing, shows pronounced fatigue symptoms with pain. A well-known musician, who as an author cannot write lines of daily criticism, has no trouble at all in the composition and the recording of scores.

In violinists the right and left hands are equally affected by the disease. Pains in the fingers which press the strings, disagreeable sensations in the bowing hand and quickly appearing fatigue in one or in both hands and arms are observed more often than the real cramp-like symptoms. The disorders begin usually in the flexors of the hands and, with continued practice, muscular tension of the extensors appear more often, so that either grasping becomes impossible or raising the fingers from the strings does not proceed with sufficient rapidity, elasticity and convenience.

Poor bowing can very well produce such a condition; a quickly instituted improvement of method in the playing may remove the disturbance, especially when it is a matter of a cramped holding of the bow or of a false, one-sided vibrato (*cf.* the vibrato-improvement exercises of Flesch and Rivarde). The former customary insertion of a cushion under the arm-pit, in order to facilitate playing with only the forearm, has been rightly abandoned, for this fixation of the shoulder could lead only to an excessive innervation and to a cramped strain of the shoulder and arm muscles. The stiff position of the right wrist as well as the faulty fixed holding of the left thumb, the pressure of the thumb on the neck of the violin and outside rotation

of the left forearm can also lead very likely to temporary or even permanent pains, sensations, feelings of paralysis and tremors.

I once saw a violinist whose practicing of a trill brought forth the strain of the biceps produced by hypertonia. It happened that a violinist wanted to make a strong impression with an especially expressive vibrato, which he customarily performed with the entire forearm. After this incorrect method was set aside by the teacher, the painful overstrain of the muscles ceased without special treatment and without long pause.

Pains in the shoulder are occasionally complained of by violinists who are in the habit of taking abnormal positions—as, for example, raising the bow too high or lowering the instrument far below the horizontal line. Inclining the head too much and in addition a severe overexertion of the neck and shoulder muscles may sometimes result in a permanent, oblique position of the head with the contraction and cramp-like tension of these muscles (platysma, sternocleidomastoideus). In extreme cases, this anomaly of position results in a decidedly slanting neck (torticollis).

The professional disorders of cellists are, in reference to the arms and hands, similar to those of the violinists. That they occur less often than the violinist's cramp is indeed explained as follows:

First, that the manner of playing the cello is with suspended and not with raised arms. Thus, the activity in a certain degree approaches a physiological resting position of the muscles. Secondly, that in general the cello is more seldom played than the violin.

In contrabass players, I have never seen a player's cramp; here the conditions for natural and uncomplicated position and movement of the fingers are particularly good. The tonal dimensions are essentially greater, and the placing of an individual tone occurs without any extreme bending and holding positions of the fingers. It is, perhaps, also not unimportant that contrabass players rarely play long continuous solo compositions in very fast tempo.

The binding and fixing of individual finger positions for the free and isolated movements of the other fingers are quite dangerous. Robert Schumann thereby ruined his artistic career; and with violinists, this method leads to unnatural positions and actions of the fingers and to pains and cramp-like fatigue symptoms. Even occasional exercises of this nature can temporarily hinder the physiological completion of touch and run-technique. This should be generally forbidden (even with the danger of losing a Ševčík étude).

Professional neurotic complaints are also rare with organists. Rather, complaints of the legs are sometimes heard among them, as well as among contrabass players. These complaints can partly be explained by the standing position, likewise by pedaling—more frequently indeed by flat feet. It may be mentioned as a curiosity that occasionally, in zither players, a weakness that is akin to lameness and muscular atrophy in the right thumb have been observed. In flute players there occurs a weakness—that is, a cramp-like muscular change in the left hand—which makes it more difficult to raise the individual fingers from the holes of the in-

strument and also to hold them securely. The more serious common professional disorders of wind players will be discussed in the fifth chapter; the profession-neuroses of singers, in the sixth chapter.

In all the specified disturbances of motor coöperation between hand and arm muscles pedagogues will, first of all, have to investigate whether a question arises of the result of incorrect and unnatural positions and movements of key-touch, of bowing or of string-pressure. Through new methods, with knowledge of the source of the defects, with the utilization of other antagonistic muscular exertions, such disorders are quickly curable—especially when one is also on watch against frequent blunders of continuous overwork (*cf.* the methodical exercises by Mayer-Mahr, Flesch and others). The interruption of practicing with the appearance of complaints is the theory of early improvement and of every cure. Occasional dropping and relaxing of the arms are also practical and often helpful.

Should the cure through method bring no relief, then the question arises of a nervous or psychical disorder (functional), and here the physician's word must be decisive. In this connection I wish to point out that in many neurotic professionals I have seen just once the combination of the disorder with organic nervous disturbance (Basedow), but innumerable times with neurasthenia, hypochondria and hysteria.

Special attention is required for the professional complaints and disorders in women and girls. From intensive inquiries we often learn that pains, states of muscular weakness, exhaustion and lack of power have existed

even before the actual study of music; indeed, many of these pale, chlorotic creatures regularly complain of pains in the arms, shoulders, legs and the small of the back. The ailments are aggravated during the menses.

When these delicate beings begin the systematic study of an instrument far surpassing their physical powers, then, in the phases of fatigue, the subjective symptoms of this weariness become more stressed and more perceptible. Girls of chlorotic, nervous constitution require a great deal of rest and many pause intervals while practicing; many even need complete suspension of work during menstruation (not only vocalists, but also instrumentalists!).

It is a grotesque exaggeration when Lapinsky reports from his experiences, that there often exist, in female neurotic professionals, gynecological affections which in turn cause an altered blood-supply in the muscular system. The only correct feature of this is that, in diseased players, the nerve stems in the shoulders, throat, arms and legs are often unusually sensitive to pressure. But it is wrong, under suggestive interrogation and palpation, which in themselves intensify or weaken complaints, to consider them as conditioned organically or reflexed. They are usually psychalgias, functional pains appearing with mental depression or symptoms of general exhaustion or of a lack of resistance power. It would be absolutely dangerous to demand a gynecological examination in such cases. Rest, encouragement and hydrotherapy quickly remove the complaints.

CHAPTER V

THE LESS COMMON DISORDERS OF PROFESSIONAL ACTIVITY THROUGH DISEASED CHANGES IN INTERNAL ORGANS, EYES, EARS, TONGUE, SKIN, LUNGS AND HEART

As already explained in the first chapter, there are disturbances in the sensory and internal organs that impair the exercise of an artistic calling just as they similarly impair the exercise of every other activity. Such disturbances naturally do not belong in the special sphere of professional disorders. Nevertheless, several of these will be briefly discussed here for the reason that they can bring to bear some particular influence upon artistic and technical activity, or even upon the artistic manner of feeling.

Thus for example it is clear even to the layman that perhaps an ailment in the middle ear can temporarily eliminate any activity for a livelihood. Such a disease, when it is combined with pains or sensations in the ear apparatus, must have a still more decidedly unfavorable influence, motor as well as psychic, upon the work of musicians.

An inflamed affection of the brain such perhaps as an inflammation of brain membranes or of brain substance (meningitis or encephalitis) confines one to bed, and, through irritation, abolition or disease symptoms in the cerebral nerves or in the motive apparatus, pre-

vents people from any activity for a long time. After the disappearance of the acute symptoms, a condition of weakness can remain, which nevertheless permits an office clerk the entire continuation of his work, but for a long time generally hinders pianists, violinists or instrumentalists in the proper handling of mechanical equipment.

With just such or similar diseases, which can develop on the basis of any infection, there appear disorders of the associative brain activity. Under such conditions the musician, as an intellectual worker, as a sensitive interpreter, is more seriously harmed by the hindrance to his active memory and by the wasting of his acquisitions of technique and of artistic expression, than, perhaps, a laborer whose chief duties are primitively learned and are more in the nature of mechanical handicraft. In this respect many diseases, which are not produced by the profession, are, in a social sense, particularly pernicious to the class of musicians. In this connection, I also recall that even such common affections as neuralgic pains, muscular rheumatism, lumbago and gout likewise disturb, more sensitively than other earning workers, the virtuoso or the musician—clearly in his professional function.

Add to this that musicians on the whole are not physically superior persons, and that hence from the beginning they are more exposed to the influence of climate, weather, overwork and defective home and school hygiene. Many groups of musicians are also most excessively exposed to the named harms by the continuous change of environment, by touring, by re-

hearsals, perhaps, in unheated quarters and by extending their professional activities far into the night. Among these I include orchestral musicians of the concert and opera ensemble, touring virtuosi, opera singers and the chorus ensemble.

There is also no professional class whose members must so continuously experience an inner strain and excitement, in the motor exertion of the work itself and its composition, as truly artistically working musicians. Assimilation, blood-pressure, pulse and breathing, action of the heart, vessels and glands all undergo, in strenuous musical work, an extraordinary intensification; the more deeply a person feels music, the more strongly marked also are the accompanying physical symptoms. These are felt partly as exertions, partly as unburdenings and partly as pleasure-stressed emotion. In long-sustained work, especially when one still has to struggle with elementary and technical matters, the advancement of all the vegetative and physical functions is intensified, but not the emotional state; then fatigue, enervation and physical weakness are the inevitable consequences.

Since the most valued artistic organization—above all, the orchestra—depends upon continuous solid unity, a conscientious musician then will more rarely use, as a pretext for the suspension of his activity, a surmountable defect. In a factory, in an enormous office, in a clinic or in a school, it is easy to replace a single individual by another. But it is the musician's privilege to play a special part in the whole as an individual. Particularly does the ensemble musician realize this,

and realize it with pride. The usual disease announcements are missing; and it is almost astounding to see how, in artistic organizations, the same persons—evening after evening, for years—are firmly held together by an artistic idea and can suppress or disregard acute complaints and also chronic ailments, even those brought on by age. When one considers what an almost heroic power is needed to conduct or play without pause such works as the *B Minor Mass* of Bach, or an act from *Tristan,* or the entire *Flying Dutchman,* he will then especially understand and appreciate this factor of subordination to an artistic conscience, with its disregard for all bodily discomfort.

There will be no essential discussion here of general disorders which do not specifically distinguish the musician from other professionals or which at most mark him, according to ethical and social questions, from other professional branches. But among the general diseases there are those which, even outside of the motive apparatus (see previous chapter) and of the voice (see next chapter) disturb, in a particular manner, the professional work of students of music. To cite such an example:

We know violinists and pianists who, during playing, must suffer the unusually troublesome condition of hands becoming moist and hot. This may be an indication of general exhaustion, may represent the expression of an internal disease (tuberculosis, feverish disease); in predisposed persons, it can also be merely the result of an irritation of the vascular and glandular activity caused by the artistic participation. Such violin-

ists, as well as those with habitually moist hands, are hardly able to play clear double stops and pure, clean harmonics. The fingers slide off the strings, slip off, make tones unsteady, and ruin the most ardently striven-for intonation. Pianists, flutists, etc., for the same reason are inaccurate, respectively, in the striking of the fingers upon the keyboard or in the pressing of the keys that open the air-holes.

Not seldom occur scaly or moist eczemas (skin eruptions), which must be treated a long time. Calluses on the hands are a protective measure against pressure, against rhagades (fissures) and ball formation, against infection by contact and against the penetration of dirt. Julius Flesch recognized in one case a painful bleeding rhagadia on the finger tip as the result of a wart, which was at once removed bloodlessly. The pianist was able to play the very next day. Nevertheless such affections are rare, just as are mucous-membrane inflammations and skin inflammations through contact with the resin. More frequent with violinists is the inflammation with the appearance of matter in the hair follicles of the beard. (Protection of the chin rest!)

In violinists and cellists the "playing-through" of fingers is notorious; commonly this designates the unpleasant pains in the finger tips. And just those fingers are attacked that exert the strongest pressure on the strings—that is, the second and third fingers of the left hand and occasionally, indeed, the index finger or thumb of the right hand: pressure upon the bow. Very often is this paresthesia (discomfort and painfulness) combined with the moistening of the hands; and there

are violinists on whose fingers, in spite of playing a long time, a calloused skin does not really form. For players who press the strings very intensely and vertically, the cat-gut then becomes a constantly new skin irritation and a trauma for the muscle and nerve-termination apparatus.

A contributing factor—or *the* contributing factor—lies perhaps in the occasional circulation disorders of the most external sections of the hand—that is, the constriction of the terminal phalanx—in long, continuous playing. I met a violinist who exhibited these circulatory symptoms very plainly, even outside of his musical activity (fingers turning blue and pallid, and syncopia attacks). But at all events this is not the rule. Heat and reddening of the finger tips and extraordinary sensitivity to pressure, stings and hot temperature more probably denote the contraction of a myalgic and perineuritic disease, conditioned through a chronic trauma. After a few days of absolute rest these disorders may spontaneously disappear; on the other hand, they may continue for months and defy all local treatment. The wrapping of the ailing fingers with kid gloves or adhesive plaster temporarily prevents pressure intensification and pain; this simple method is occasionally employed even by virtuosi in public playing. That the pains originate from a deposit of lactic acid is a widely spread, yet hardly provable, assumption.

Instrumentalists who suffer from increased perspiration secretion require special skin, hand and nail care. This is to-day a self-evident duty of every person. Twenty years ago it was not so. And we find, among

older musicians, many who lost their nails through nail-base festering. Splits and rhagades of the skin and poorly cut nails, especially with moist hands, promote the influx of bacteria into the lymphatic and blood channels. Under the self-forming calloused skin there occur whitlows and paronychias—occasionally even accumulations of blood and matter.

Similarly disagreeable can become the pressure of the chin rest. The well-known red-brown pigmented skin thickening has formed as far as the left side of the violinist's neck, and it develops to the point of superficial frictions and inflammations; first the chronic pressure causes a hardening of the epidermis, which then acts as a protective wall against pressure. In the inflamed stage, I have even observed the swelling of the neck and nape glands.

Flutists and oboe and clarinet players feel occasional painful sensations in the tongue during long, continuous passages, as for example in the accompaniment of operatic pieces. Usually these diminish quickly; but during very strenuous exertion even the region of the throat is painful, and the player has a feeling as if the muscles in the proximity of the tongue bone were cramped together.

Likewise, with trumpet, horn and trombone players, strained, painful sensations of the lip muscles occasionally occur, though they pass soon after pausing. And among army drummers, pains occur in the hand, similar to those which we have described in the profession-neuroses of violinists and pianists. These symptoms of overexertion seldom lead to a chronic suffering; the

pauses here are, indeed, much more regular and sustained than with soloists.

But that which is very rare among musicians of theater and symphony orchestras is now unfortunately increased among cinema musicians. I know two wind players, a flutist and a trombone player, both of whom, after playing from six to seven hours daily for months, have suffered from a severe overexertion of the lips. They describe their complaints in the following manner: The upper lip, after a brief attempt at blowing, weakens, is caught in the opening of the instrument, and blowing finally becomes impossible. One declared that his upper lip had become longer. As a matter of fact it had become thinner, its outer edge bunched up and curved, and its tension (tonus) seemed to possess less healthy electrical reaction. Treatment of the upper teeth at first brought improvement through better support and then was completely ineffective. The sick person could not even whistle any more. After a rest of four months he resumed his profession in a smaller field of activity; the flutist changed his career to that of drummer. Both reported a similar case among their colleagues that resulted in a complete abandonment of professional activity. Unfortunately these ailing persons, who are earning their livelihoods, first come to the physician, as a rule, when it is no longer possible for them to blow.

I have frequently seen cases of eczema on the lower lips of flutists; they are benign and heal quickly. Julius Flesch witnessed and described the following affections in trumpet players: Small, scaly, thin layers or harder

protuberances on the lip epithelium; on the rim of the lower lip, small, painless knots which easily fall off, leaving behind a scaly place. The lips of trumpet players are far below sensitive—which Flesch, rightly too, reduced to a professionally conditioned, chronic passive hyperemia. Parallel observations of a clinical nature recall that carcinomata, precisely as among wind players, easily concentrate first upon lips or tongue. (I have observed such a case.) Even *bleeding* of the lips was observed, after hours of strenuous blowing.

Various forms of nervousness are naturally also known to the wind player and sensed in his own body. Their responsibility in the orchestra is indeed, through their solo activities, much greater still than that of the ensemble violinist. Their anxiety before a difficult "chiming in together," before passages which "lie poorly," and before the woodwind effects at the beginning of a concert composition, is known and comprehensible. It is precisely the expectation of a difficulty that increases a difficulty. An oboe, a clarinet or a horn solo in an opera or in a symphony—these are tests before a mixed public; they are also, in routined but strongly spiritual musicians, new trials for the endurance of the nerves. With the rush of blood to the head (congestion), the concentration, through the excitement of breathing, can change the lip-placement; and the saliva secretion can decrease from expectation conceptions. Dry lips blow poorly, and an insufficiently moistened tongue remains inelastic. Vibrations of the tube can drive irritable, excited tube blowers to despair in hours of fatigue.

The learned professional musician Oberheide (Cologne) also includes among professional hindrances "poor placement" and a defect in lip flexibility produced by heat or cold and not always removable through the care of mouth, lips and teeth. The changing of tubes and reeds in blowing also does not facilitate the evenness and repose of the placement. A predisposition of a nervous or muscular nature must indeed be assumed; particularly when, from among many players of the same category, of the same age and of the same intensity, always only a few become sick. In the problem of professional qualification this predisposition must, at some time in the future, play just as great a part as perhaps that of the pianist's and violinist's fingers or of poorly constructed chest development in singers and blowers.

When musicians complain of eye pains while reading notes, the indication is generally not that of a disorder caused by overexertion—there is no near-sightedness caused by overexertion—but is merely the manifestation and the display of an already existing, possibly inborn, disorder caused by particularly intensive and rapid eye-work. Usually the notes are not at a favorable distance from the eye-lens; also, the lighting is not always of the best. Indeed many eye troubles of musicians are caused not by vision but by the corrosion of the conjunctiva through smoke and dusty air. This applies, above all, to musicians who play in cafés and restaurants.

That musicians easily become near-sighted from note-reading is a long since refuted statement. Myopia (near-

sightedness) is almost always inborn; even the acquired condition is associated with a special predisposition. Even if one adds the note copyists, who really use their optic apparatus much more strenuously than players, the number of musicians who have become myopic is still very small (scarcely ten percent, according Cohn-Breslau). The correction of the anomaly in near-sighted and far-sighted persons is all the more essential, since the consequent symptoms, such as headaches, quick fatigue and general nervousness, may soon be removed by fitted glasses. Often double-focused glasses (for near and far vision) are necessary; and in astigmatism, cylindrical glasses. At the cinema the excessively glaring light reflected from the screen, because of its irritation to the conjunctiva, must occasionally necessitate the use of dark protecting glasses.

It is often asserted that musicians in particular enjoy drinking. Statistics concerning this cannot be found to decide whether, among the spiritual callings, the musician is actually urged to the enjoyment of liquor more than others. The pathological indulgence in alcohol, the abuse of liquor, can indeed be encouraged by opportunity, but scientifically is not to be complicated with the exercise of the musical profession. A decidedly cautious judgment is more likely to connect professional musical work with overindulgence in nicotine, as the easiest and most convenient sort of stimulant for the nerves, which is simultaneously a diversion and a sedative. But here also, statistics may not be at our disposal, and not quite scientific evidence may be valid.

At times stomach and intestinal disorders can be in-

ternally connected with the professional work of musicians. Here the fault lies in the haste with which highly overstrained artists or pedagogues act in the discharge of their duties, or in their unhygienic custom of drinking cold beverages directly after being overheated through playing.

In connection with the indulgence in tobacco and alcohol, there very seldom occur inflammatory ailments of the ear nerves. These are particularly dangerous to musicians. Through securely substantiated histological examinations of the optic nerves, it is demonstrated that these poisons can cause inflammations (so-called toxic) similar to those caused by the use of quinine or salicyl. In this manner there may occur a usually double-sided hearing disturbance or a disagreeable whistling in the ear combined with giddiness.

There is also a professional defective hearing. Even a single very loud noise, sharp report or whistle can produce it. With the cultural development of our orchestral instruments and of our music, it is true, the musician is less likely to be attacked by this professional defect of hearing than, perhaps, a coppersmith, locksmith, locomotive engineer or gunner. Through experiments Wittmaack has even established that a degeneration of the nerve elements in the helix can result from the long, continuous duration of powerful, high-pitched tones. On the whole, the auditory organ is capable of extraordinary resistance even against considerable noise, so that a professional disorder really does not exist in the sphere of danger.

As a result of accidents and mental attacks, hysterical

deafness may arise, which is even frequently combined with muteness; in consequence of intense mental over-exertion in playing, there has been observed, especially in older persons and those with unstable vascular systems, a simple nervous ear-whistling, which is never associated with a lower efficiency in hearing. During the war we saw such disorders in great numbers, always, of course, without the possibility of separating the nervous and hysterical ailments from frank simulation.

In general exhaustion of the body and of the nerves, as well as in connection with other neuralgic states and diseases of the teeth or of the tonsils, there may also appear pains in the ear, without proof of an inflamed affection. Since the sensory equipments of the lower jaw and of the ear are the same (branch of third trigeminal nerve), a connection between jaw disease and ear pains is not altogether rare.

Certain disagreeable clock-like tickings which can also be designated as a motor neurosis of the middle ear, can be explained as nervous, and caused by clonic spasms of the musculature of the ear-trumpet. These disturbing noises coincide with convulsions of the soft palate. As soon as one fixes the soft palate with a finger they vanish.

Moreover, through cramps of the interior muscles of the middle ear there occur subjective, endogenous (originating in the ear) noises. They are combined with a contraction of the musculus tensor tympani and are frequently and especially clear in yawning. In this case, as with the drawn-out, humming ear noises occasionally heard during singing, it is probably a question of trans-

mission from the mastication and pharyngeal musculature to the ear. All these symptoms are almost always nervous, in consequence of exhaustion or overwork, and are manifested as special accentuations of a general neurasthenia or hysteria.

Of similar psychogenic origin—that is, not organically caused—are occasional tonic tension cramps of the pharyngeal musculature, which are subjectively exhibited as a feeling of a ball in the throat, or as difficult or defective swallowing. Moreover, there are generally found a reduced sensitivity of the palate or of the pharynx and a lack of the retching reflexes; these contractions of the pharynx musculature, precisely through these accompanying conditions, are usually quickly recognized as typically hysterical.

Finally, nervous conditions also cause the oversensitivity of many musicians to high tones as well as to any sound that is too loud, shrill or noisy. One who feels physical discomfort, stomach pains, intestinal colic and toothaches on hearing certain tones or instruments, is poorly qualified for a musician. Intensive and regular color-hearing, the so-called "chromatic phonopsia," may make it difficult to pursue the profession. Up to a certain degree all these phenomena—including the lack of reaction to auditory impressions in the motor region—constitute the general rule. They become intensified, morbidly penetrating, disagreeable sensations, in the alien sense territories of psychopaths and hysterics.

An especially disagreeable disease among wind players, occasionally compelling the abandonment of the profession, is the enlargement of the lungs—emphy-

sema. The enlargement of lung capacity also occurs, to be sure, in quite healthy persons who do not blow any instruments. Usually it supervenes at first in advanced age or in persons with bronchial catarrh. The essence of this process consists in the gradual shrinkage of the elastic fibers of the lungs. The lungs correspond to the normal neither during inspiration, in not expanding so extensively, nor during expiration, in not contracting so strongly. This pathological state is best compared to a rubber band which is no longer new.

The inflation of the lungs in blowers, especially brass blowers, is very often nothing but the result of an incorrect blowing method. The lung inflation is encumbered either by a too violent inhalation which expands the lung bladders, or by a forced inhalation pressure, which excessively enlarges the individual parts of the lung. With shortness of breath, with apex pulmonary affections and with diseases of the heart, such emphysematic enlargements take place as compensation functions.

In the use of wind instruments, as frequently in singing, the lungs are often exposed to a particularly severe expiration pressure. Hardly through temporary, but, indeed, through long-continued blowing of the instrument, it can develop from the increased expiratory reduction of the lungs to a reduction of elasticity—even to atrophy of the alveolar walls. The entire chest then is drawn high in inspiratory expansion, rigidly barrel-shaped, abnormally vaulted and the neck seems to be too short. Gradually, exhalation becomes weaker, shorter and more difficult, and soon shortness of breath sets in.

While there is scarcely danger to life itself, the efficiency of production is thereby lowered.

Emphysema seldom appears in orchestral musicians before the fortieth year; when this is combined with disorders of breathing and heart-action—even if the disorder is only of a mild degree—it incapacitates the person for earning his livelihood. An improvement is possible; but there is no cure for emphysema.

Particularly in recent years among wind players of orchestras at spas, there has been an accumulation of those complaints which are often the first symptoms of inelastic lung movement—pains in the chest, in the diaphragm, and around the lower rib aperture. The greatest caution is essential with these first symptoms, if one desires to check the menace of a chronic condition of the wind player.

Formerly blowers (of military bands) were also affected by nervous disorders, which perhaps corresponded, with respect to origin, duration and complaints, to the coördination neuroses of violinists and pianists. Dünes described several such cases from his copious material (Saxon military bands). A trumpeter's lower lip slipped from the mouthpiece, "as though paralyzed." He could not blow tones of a certain high pitch, and with increased exertion of the lip muscles saliva ran from the mouth. Moreover, there was no pain with that, but only the sensation of a heavy "lump" in the mouth (cheek). During blowing, the air escaped between lower lip and mouthpiece. Oppenheim similarly described a blower's cramp sensations in the muscle orbicularis oris and his inability to produce tones

in correct pitch, while Strümpell described a tongue cramp in a clarinet player, and Turner in a cornet player. While resting, even the most complicated tongue movements could be correctly and powerfully executed.

Also in the rarer neuroses of wind players, a cramp-like, spastic form can, perhaps, be distinguished from a paralytic form akin to lameness: absolute reflected images of the coördination neurosis. The worst case that I myself have seen (a flute player) showed, in a singular manner, symptoms of electrical degeneration in the lips. That definitely indicated an organic nerve disease. The man was treated in many ways as a nervous patient—partly also through the regulation of the teeth. But my diagnosis (dementia paralytica) was confirmed a year later in a private institution. A condition of obliteration of the upper and lower collar-bone cavities often occurs among blowers, especially oboe players.

According to Jagic, the greatest amount of air is consumed by trombone players, an average amount by bassoon and oboe players, and a small amount by flute, clarinet, horn and trumpet players. Moreover, from the results of accurate röntgenological examinations of forty-six wind players, Jagic doubts the predisposition toward emphysema. Besides, an especially easy laceration of the vessels, which would be explained by great congestion in the veins and the pressure connected with it, is not proved. Constant abdominal muscular pressure, to be sure, enhances the occurrence of inguinal hernia.

The abdominal musculature is considerably pressed by the quick, deep breathing of wind players, and many

stomach discomforts seem to originate from this, as Oberheide again reported recently. Through the alteration of the heart action, through the blood congestion and through the shifting of the circulation, inflammation in the head may also develop to swoon-like fits, to pressure sensations and to attacks of dizziness. The less a natural, sound breathing technique is valued in the state blowing schools and in many orchestral schools, the more numerous become cases of emphysema in young persons. If the injury is noticed soon, it can still be removed. The lung-webs in young people are still elastic enough to be re-trained systematically. I have just recently witnessed a complete recovery through the systematic breathing exercises of Professor Koetsier, of two emphysematic, incorrectly breathing blowers, aged sixteen and seventeen years, one of whom suffered daily asthma attacks.

CHAPTER VI

VOCAL DISEASES

THE complete apparatus of the vocal reed is equally as important to singers as the musculature of the arms is to violinists and pianists. The pharyngo-oral cavities, the naso-pharynx cavity and the nasal cavities, with all the appurtenances, especially in the head cavities, are as essential for correct speaking as for artistic singing. Daily experiences prove that even superficial diseases of the lips, teeth, tongue, palate, uvula, tonsils, jaws and frontal cavities can hinder the functioning of beautiful speech or singing. Affections in the mouth especially, as well as in the naso-pharynx cavity, easily hurt the upper tones, which determine the modulation and the timbre of the voice; also frontal and jaw cavities are included among these important organs for resonance.

Therefore, in proper voice culture, vocal students should undergo examinations of the nose, throat and accessory cavities for proliferations, polyps and tonsil swellings, and for the persistence or enlargement of throat tonsils, which usually disappear after puberty. Furthermore, it must not be considered necessary to operate regularly on enlarged tonsils or proliferations. Through such surgical interventions, sometimes the normal fundamentals of the best tone resonance become damaged in some way.

Perhaps in no professional disorders of musicians are good and bad results for those concerned so very much dependent on teachers and on the correct method of breathing and singing, as with beginners in vocal study; and here, the method—which indeed in no other branch of music study is so differentiated as among singing teachers—undoubtedly exerts an extraordinarily damaging influence.[1]

Most persons outside of those pursuing artistic study, except perhaps among school children, orators, preachers and teachers, do not attach too much importance to the cultivation to their speech. Very few know what correct and economical breathing is, or know that, unless one has proper breath control, an artistic speaking or singing performance cannot take place without continuous disturbance. Faulty breathing also produces disorders of speech, such conditions as bubbling-over, quick speech in a blustering voice, or stammering or drawling.

Pneumographical examinations by Gutzmann and others have shown that functional disorders of the voice are sometimes caused by defective chest breathing, and at other times by the disarrangement of the coöperation between chest and abdominal breathing—in general, therefore, caused by *incoördination of the muscular movements in breathing*. This results in audible gasping inhalation and in weak, incompleted exhalation, which again leads to premature fresh inhalation. More-

[1] Vocal teachers become famous through their pupils at least as often as pupils through their teachers. Sometimes the cramped pedagogical attempts of beautiful singers remind one of those physical experts of aviation who asserted that the lark does not fly "correctly."

over, in the excitement and emotion of the performance, and in the strain of public singing, there occurs a change in breathing, so that individuals, who when resting still breathe tolerably well, at the very outset of the performance begin to be confused in the normal functioning of breathing.

Indeed, there are secondary changes in the form of tensions of the larynx musculature and of the diaphragm—disorders which may be partly conditioned through a cold in the lungs or through heart disturbances; but still more disturbing, though also correctible by practice, are the primal breathing disorders which are essentially caused by too frequent inspiratory movements and by premature forcing of the breath. Secondarily the breathing, and with it the voice, can finally be altered through diseases of the throat and nose as well as through general diseases of the nerves, of the digestive apparatus and of blood circulation.

The more common articulation disorders of lisping, stuttering, nasal twang and of stridulation are almost always inborn conditions, and difficult to correct.

In order to diminish the number of professional disturbances among singers, it would be necessary to examine every student most closely in reference to vocal character, hearing, tone culture, pharynx, throat and breathing. This does not usually happen; and, generally, the investigation into earlier diseases and the interrogation for special predispositions and talents are very cursory. Moreover, it is certainly not immaterial, and is even essential, in regard to possible professional injuries, to know whether a singer, during childhood,

was inclined to catch colds, whether he had passed through any throat ailments (and which), how often he suffered from catarrh and hoarseness, and how the period of voice alteration ended.

Also, a general examination of constitutional disorders, such as anemia, heart diseases and scrofula, would be necessary before real artistic vocal training, for with many such diseases the anamnesis, and sometimes also the family history of disease, reveals that the affected person either suffered from exhaustion, fainting and fatigue, or that he was particularly susceptible to headaches, throat inflammations and catarrh of the trachea. Because of these physical ailments or weak conditions, professional singing, often even before the actual beginning of study, may be regarded as being without good prospects, for study proves that the career of singing is not for such physically inferior persons.

Besides these inborn and general conditions of weakness, the psychical indispositions play a great part in professional injury. Even among healthy persons the fear before a test, singing at rehearsals and the entrance examinations at conservatories can in themselves mean such shocks that the voice refuses to function, is uncertain or quickly tires. But persons who suffer for a long time either from the constitution (endogenously), from severe shocks, disappointments, grief, chronic nervous exhaustion or mental depressions, are also to be considered as disposed to future professional disorders.

There are many persons to-day who were ejected from another profession because of necessity, incapability or destiny and who pass into the study of

singing. With these singers, the danger is especially great; for in striving for quick returns they overdo their studying, overexert their voices and overrate their powers. They are also constantly threatened with professional disorders.

It is similar with those whose vocal characters were at one time incorrectly recognized, or who for personal reasons, often vanity, proceed into a new system of instruction in order to have the voice transposed, perhaps, from a baritone to a tenor, or from a soprano to an alto. There are few singers who have studied with only one teacher, and there are still fewer singers who did not acquire different instruction from every teacher. Sudden and constantly interrupted and changed teaching opinions—perhaps in reference to the covering of the tone, of the hard, soft or medium voice placement, or of the tone resonance—are often not without an effect upon vocal range, sureness of intonation, vocal power and tone. In order to compensate for the defects which his own teacher more seldom perceives in the pupil, than the pupil perceives in himself or his environment, the study is changed and the duration of practicing is lengthened; the pupil first notices, in the appearance of hoarseness or harshness of the voice, in the trembling of the voice, in quick tiring or in false intonation, that the overexertion has only increased the defects. Thus even in healthy, capable musicians, actual professional disorders, which would be impossible if physical signs and functions were taken as a basis, are occasionally developed through incorrect teaching.

Possibly these disorders, as well as the diseases of the

voice which are produced by regular singing during the mutation period (change of voice), almost never belong to the organic diseases, in which actual changes in the apparatus of the vocal reed would be found. They are more probably functional disturbances which can be removed, even through an improved breathing, singing and speaking method, and which, from the beginning, would generally have been avoided by correct schooling.

Functional hoarseness is most frequently found in early childhood and in boarding schools—even ninety-nine percent, according to examinations by Fröschels and others. Yet if this figure is considered actually too high, there is nevertheless no doubt that, even before the voice change, many children with a normal objective larynx condition have harsh voices. From these disorders there appears quite clearly the incongruity between chest and abdominal breathing which, through the frequent and superficial inhalation, causes the extravagant waste of absorbed air. This is also a result of faulty singing instruction, which requires the children to sing loudly, and which does not give enough consideration to the range of the childish voice. The results of this are overexertion, pressure of the pharyngeal musculature upon the larynx, an overburdening of the vocal reed and an overpowerful action of the glottis constrictor. Shouting in the children's chorus at school often leads to the first disorders, precisely in the sense of functional hoarseness.

Among the nervously conditioned, so-called nervous disorders of the voice, besides phonasthenia (voice

weakness), which is to be discussed later there are: The barking, metallic-sounding larynx cough, the glottis cramp and voicelessness, which is usually hysterical. Most disorders of this nature, which really appear more often in women than in men, reveal no objective conditions of disease in the throat. Individuals so affected, feel pressure, tickling and rawness in the throat; moreover, they are often able to speak with normal sound, but, in the attempt to sing, the disturbance immediately arises.

The cough mentioned can easily be recognized by its accompanying whining sound and by the absence of redness in the vocal cords; usually a mental cause will be discovered for the suffering. The glottis cramp (spastic dysphonia or phonetic glottis cramp) is similar to the stuttering in an occupation-neurosis of the vocal cords. In professional speakers who have this nervous or psychical disturbance, the words are chopped, the syllables jerked apart, and speech is troublesome; in singers who experience a cramp during inhalation, the tones sound squeezed and dull and facial movements appear in connection with it.

Hysterical voicelessness or muteness is either cramp-like or paralytic in nature. A disturbance of the larynx functions results from excitement, fright and more from the influence of an acute, than from chronic mental irritation. It develops not in the course of weeks, but of hours or minutes. The arbitrary phonation impulses, which are conducted from the brain to the throat and tongue, disappear under the influence of the shock, while the active reflex centers remain intact. Thus it

happens that the expression movements connected with the muscular movements of the larynx, such as laughing, coughing, crying and clearing the throat function perfectly well, while during speech, absolute hoarseness exists.

These symptoms have partly originated from autosuggestion and can be partly explained by psychical weakness of will. If, under the same provisions, the vocal cords in the attempt to phonate lie cramped upon each other and thus hinder normal vibration, there then also occurs a hysterical functional vocal disorder; the tone of the voice is squeezed and is without resonance. During the war we saw this functional voicelessness on innumerable occasions. Generally, nothing was proved, or merely an unimportant catarrhal change in the larynx, while the action of the vocal cords at the moment of phonation was greatly disturbed (remaining in the position of exhalation or of whispering). Just as disorders of such a kind are mentally originated, even so can they be cured by mental encouragement under suggestive measures. The best means is through the production of a counter-shock by electrical stimulation of the larynx, or through methods which cause involuntary sound (insertion of a ball in the larynx).

Among professional disturbances should be counted, above all, those which have been produced through a quantitative or qualitative abuse of the voice. Too much is often demanded in study of delicate voices. The individual limitations of production capacity are unusually varied in vocal organs. It is the pedagogue's concern to understand the pupil's individuality and constitution

as a whole, and of the throat in particular. The slow and steady advance in work will generally bring greater progress than quick work by leaps and bounds. Qualitatively, the voice is misused through poor breathing, incorrect use of the registers, defective voice-placement and inferior utilization of the resonance cavities.

Through the investigations of Paulsen and Gutzmann, the voice range is actually known for the individual age. It would be all the more convenient to avoid disorders in school chorus-singing and in the mutation period, which provide for new professional injuries even during study at an adult age.

Indeed laws can hardly be established for the duration of practicing; but it can certainly be stated that every fatigue has a cause, either local or general. To combat the symptoms of fatigue while combating the fatigue through voice training is an incorrect undertaking.

These states of muscular fatigue are usually combined with pains in the throat and feelings of pressure, and these indispositions force singers to the only possible control of these disease symptoms—to rest. In healthy persons who are not nervous, the teacher indeed is often able to prevent the frequency and the duration of such fatigue symptoms through correct recognition of the vocal register, proper abdominal and diaphragm breathing, extensive use of the breath in voice-placement, great continuous spinning of the tone and its smooth streaming in legato, through the cultivation of the unbroken transition between registers and, above all, through reference to the complaints, which

arise from the forced use of the chest register, especially when the upper tones of the head register with small blowing-streams are light (Gerber). Since the carrying ability of deeper voices is less than higher ones, a basso must use ten to fifteen times more strength than a tenor. In any event, the theory that any exertion, according to its duration and intensity, must be followed by adequate recovery, is of great advantage to all work in life, as also to the pedagogical methods of all good singing teachers.

Many touring singers, especially when they have attained fame and undertake prearranged tours, notice irregularities during singing, without realizing that they are caused by general exhaustion, by the inevitable colds and also by overindulgence in stimulating drinks. But many others—and they probably would be the majority—conceal under the form of professional troubles, either a defect in technical training, or simply a lack of talent.

So-called phonasthenia may be regarded as the most important and as the most frequent disturbance among singers. Occasionally technical faults are also the fundamental grounds for it; however, these functional hindrances in speaking and singing are more often the sympathetic symptoms of a general nervous weakness. As a symptom, it dominates so powerfully that other simultaneous complaints can become quite insignificant and moreover can be recognized only when the attention of the examining physician or of the analyzing teacher is focused upon it.

This disease (also called mogiphonia)—accurately

studied by Flatau, Fränkel, Gutzmann, Barth, Imhofer, Fröschels and others—is the real functional and professional disease of speakers and singers. It always originates in connection with overexertion and fatigue —it being immaterial whether it results from exceeding the practice limit by a healthy person or from the normal amount of practice by a nervously diseased person. With this prematurely appearing voice weakness in speakers, the speech, after a brief period, becomes tired, toneless and feeble; the fatigue is attended by pressure sensations in the throat and cough irritations; the voice eventually becomes tremulous; the tone is poorly sustained, and finally total voicelessness (aphonia) sets in.

The most common symptoms of phonasthenia in singers are disorders of intonation, of vocal power, of tone duration and of vocal tone. In laryngoscopic examinations there are often found muscular weaknesses of the longitudinal tensor muscles, whereby the upper tones are more deeply affected than the lower ones.

The first thing that is actually noticed is the reduction of the tone-range; certain high tones which were conveniently sung at other times by sopranos and tenors, and certain low tones by bassos, become impure, difficult, strained or painful. The fear of not being able to reach such abruptly occurring tones increases the feeling of insufficiency, while calming and encouragement sometimes remove the disturbance. Then patients often complain that it is much more difficult to sing such tones successfully at home, than at the physician's office. In the attempt, however, to reach the tones which

no longer seem pleasant, the ailing persons are either off key or falsely intonate the tone in order to make up for the lower singing. First of all the patients set their tones too low and then involuntarily produce higher ones. When around the desired pitch the tone begins to oscillate, the degree of power is not uniform, the tone can no longer be sung piano, or sufficiently sustained and spinned. It is this troublesome and inartistic trembling of the tones that sound most unpleasant in soft voice-placement.

In these diseased persons, the timbre of the voice can also be changed; the once clear and fine voice sounds squeezed and hoarse, it is inflexible and incapable of modulation. The volume of the voice diminishes; it develops to the condition of sudden inability to sing, to produce or to drop tones or of an abrupt break in singing, and the individual tones become shortened in duration. Then also great irregularity in breathing does not fail to appear. Nevertheless, false breathing is more probably the cause and not the result of phonasthenia.

As stated, organic changes, such as redness of the vocal cords, of the larynx and throat, seldom, in any case, are decisive factors. Nevertheless, small surgical sectional interventions in the tonsils have occasionally been successful; more often a change of teaching method, particularly the abolishment of the *coup de glotte,* has an improving effect.

With the extraordinary importance of medical and pedagogical influence in vocal fatigue, these general considerations should be followed by still closer observations of the objective and subjective details of the

disease. Through the work of Fränkel and Imhofer, whose experience and pertinent observations we have adapted, phonasthenia has been so thoroughly investigated that every good teacher, every responsible pupil and every counseling physician should recognize and know its fundamental causes, symptoms, character and methods of treatment.

The problem of this professional disorder is deeply involved in the problem of "teaching methods," which, indeed for decades, as is commonly known, has caused mischief, especially among singers. The correct method, the only successful one, is not necessarily the one in which a famous star was instructed—this may have been chance and the exact adaptation of the appropriate method to the individual voice; but that method is correct which produces beautiful singing, which does not press every voice into a standard mold, which promotes the utilization of the natural functions of the vocal organs without constraint and exaggeration and in which work is done without experimentation, and with an outlook upon artistic and not virtuoso effects. Every "particularly approved method" may be good for one and poor for another; every dilettante of teaching can sometimes have luck with a singing phenomenon; every celebrated singing master can sometimes be wrecked by the defects of a larynx, of a physical or a mental constitution. The art of the pedagogue is not demonstrated by a genius—the genius creates the teacher and not *vice versa*—but by the average artist, by a good and fine, but not extraordinary, singing voice. The best teacher is the one who first recognizes phonas-

thenia, who removes it most quickly, who numbers among his pupils the fewest of those professionally diseased, and who, at the same time, brings out the best qualities in molding the given material.

The objective symptoms of phonasthenia are therefore the detonations because of low tension of the vocal cords. If the singer notices this detonation he then draws the tone high, indeed he overcompensates the tone-pitch and sings too high; or the pitch oscillates, the correct tone cannot be sustained or the tone sounds harsh and unclear and can be produced only in mezzoforte or forte, and no longer in piano. In attempting to swell the tone, it is completely lost; one hears but the streaming-out of air. The first symptoms of fatigue are always audible in the same and generally not at all many tones (two to four half tones)—usually the transition tones of the chest to the head register. If the first disorders are not recognized, are disregarded or are not treated, the disease then spreads over a wide area and may finally attack the entire vocal compass (as far as the deep chest tones).

Through tricks and special selection of compositions, through forte singing and through favoring the *coup de glotte,* one indeed apparently succeeds in overcoming the defects—that is, in cheating them. But, after two to four years, the voice is ruined. Even if, in the beginning of the disease, laryngoscopic changes in the larynx are very rare—phonasthenia belongs to the functional disturbances, to the functional neuroses, and not to the organic changes—nevertheless, in connection with the progress of the disease, there are often visible such

changes as redness of the vocal cords and bottle-shaped swelling of their edges, loosening of the vocal cords, laryngeal catarrh with secretion of sticky mucous, redness and hardening and in the last stages, also blistering and meagerness of the vocal cords and overlapping of the arytenoid cartilage. Usually the diseased singers notice these disturbances of intonation less than catarrhal symptoms, tickling, dryness and mucous congestion; only later do there appear the subjective indispositions of difficult singing, of cramp and pain in the throat and of quick tiring and of slackening. As soon as the singer or pupil becomes conscious of the disappearances of brilliance, range, clearness and uniformity of the voice, there then appear the symptoms of neurasthenia, of nervous fear, excitement and depression; from the base of local disease there has developed a general disease of the organism, of the nerves and of the spirit.

Imhofer attributes the more common occurrence of phonasthenia in women and girls than in men to the frequency of lack of blood, chlorosis and anemia in the female sex. Like pregnancy, convalescence after feverish diseases and the period of voice change, it reduces the production capacity of the musculature. There is also hardly any doubt that acute and chronic diseases of the upper air passages can lay a solid foundation (predisposition) for phonasthenia, if the local processes are not treated and improved in their early stages.

As further essential causes, Imhofer names the excessive demands upon vocal organs in general, the hoisting of the voice, faulty breathing technique, defective

position of the larynx, of the jaws, lips and cheeks, the depression of the larynx, *coup de glotte* and exaggerated open singing (which is ostensibly typical of Italian singing, but the defectiveness of which has long been scientifically recognized by Pielke). All these and similar special tricks of unswerving pedants act against the law of natural singing and against the principle of the least expenditure of strength; when consistently taught and followed, they lead to quasi-forced positions and disarrangements "in some part of the apparatus necessary for tone-production and tone-direction" (Imhofer); the foundation is laid for phonasthenia, that is to say, the gradual ruination of the voice.

The complaints of those who suffer from phonasthenia are indeed very typical; the objective examination of the larynx with the speculum and the functional tests of the voice during medical consultation (as taught by Gutzmann, Flatau, Nadoleczny, Barth and Fröschels), as well as the balance methods inaugurated by Flatau (compensation, compression, electricity and expansion of the vocal cords)—all these complete the picture and are required in every diagnosis. The electrical-compensation procedure is, practically, the most important and convenient. Through the conduction of a weak faradic [1] current straight across the larynx, the normal and clearly sounded tone automatically rises upwards; if the tone is false and too low, the electric current then effects a compensation for the faulty intonation and the tone sounds clear.

[1] *Translator's note:* Michael Faraday, English chemist and physicist (1791–1867).

The prediction of the duration of the disease depends greatly upon the measure of the success of this compensation. As for the rest, the prognosis is dependent upon the age of the diseased (in the fifth decade the chances of recovery are very small), upon the general physical and nervous condition, upon the early application of treatment, upon the duration of the disease, and upon the intensity, patience, energy and perseverance with which the physician and patient (both!) devote themselves to the cure.

Thausing, in a very spirited book, has argued against all the characteristics here advanced of clinical singing disorders. What he declares, partly supported by Arnim's little regarded works, is quite attractive, according to form and contents. And not only because the author accurately analyzes the ruin of the voice, recognizes the logical coöperation between vocal closing and abdominal pressure, and shapes his methodical exercises for singers incapable of production in a manner which is as clear as it is physiologically correct.

The insight into the singer's psyche is still more essential than this understanding of the value and the importance of vocal coördination. He regards singers as being particularly strong natures, physically as well as mentally (this may probably apply only to male and female opera singers), and thus also believes that even in their exhausting activity they become "nervous" less easily and less quickly. But the loss of a single tone may strike them with the force of an unprecedented shock and with good reason; for here indeed existence and life's tasks are at stake. But now the artist is not made

"nervous" by practicing, studying, working and singing so that he consequently loses his voice, but on the contrary he loses his voice or an essential of his voice, in regard to beauty, range, expression or production capacity, and thereby first becomes "nervous." Every singer's voice must, indeed, at some time pay the toll (Battistini is the sole phenomenal exception), and thus the physiological symptoms of vocal disorders border close upon the pathological.

Thausing correctly establishes the discrepancy between severe functional disorders of the vocal cords and the defects in the objective condition in the accentuation of the psychic mechanism and in the decline of the voice. The most important muscles are at first gradually enervated by the slackening of the functional connections. According to Thausing, acute fatigue by no means plays the rôle which it temporarily seems to have. Only through steady, energetic practicing, and not through repose, can a singer's voice remain sound. In a similar sense Thausing (also followed by Julius Flesch) gives his attention to the diseases of the mucous membrane and to the catarrhs of singers.

There is also a discussion of the Arnim examinations of vocal pressure and congestion, which, in view of the modern therapy of inflammations through congestion, are indispensable to the special stimulation of practical focusing. There is neither space nor justification here for deciding the battles of theoreticians. That must be done by the specialists. However, the course of scientific literature and research laboratories should no longer bar such ingenious considerations and such weighty

observation material as those of Arnim and Thausing (also in respect to the vocal crises and curative measures for singers).

Let us also mention that, according to the experience of many, perhaps of most, singing teachers of high standing, the Arnim method of singing can cause severe injuries to the vocal organs. Therefore, it is certainly not the only successful method; and it cannot escape the historical stigma that, years ago, a "Society of Victims of the Arnim Method" was announced.

The singer is more exposed to colds and more seriously disturbed by them than other musicians; for to the vocal reed belong all those organs covered by mucous membranes that display predispositions to catarrhal ailments, even with other individuals. Sometimes such conditions are also effected by innate marks such as a too widely or a too narrowly formed nose. In the first case, the air passes through the naso-pharynx cavity too quickly to let the air become warmer and freer from dirt or bacteria; in the narrow nose, to attain good breathing one must often resort to mouth breathing. But this kind of breathing is as unhygienic as it is uneconomical; for dry, cold and bacteria-laden air is absorbed; while, in normal nose breathing, the air is saturated with moisture, and organic ingredients, bacteria, etc., can be excluded. With such susceptibility, catarrh of the tonsils, of the larynx, indeed, even of the lungs, is sometimes unavoidable.

In accumulated and periodically returning affections of the tonsils (feverish angina) the endeavor for permanent improvement is often made through the removal

of the tonsils. This may sometimes actually remove the disorders, but should be performed only in extreme cases, and not regularly; for it is certain that the glandular apparatus of the tonsils can function as filters against germs and bacteria, and that they also have a decided significance for the timbre of the voice as a lowering apparatus.

Finally, singers should make early and regular efforts to protect themselves from colds and infections through special physical care and hygiene. Such methods include inurement, especially of the air-passages, rubbings with alcohol and water, air-baths, the provision of oxygen containing air, the clearing, rinsing and gargling of the throat and mouth, outdoor exercising and breathing exercises.

The most common symptom of an existing inflammation of mucous membranes of the pharynx, throat or trachea is a husky voice, is hoarseness. Hoarseness is always a symptom of a catarrhal alteration of the vocal cords (if a hysterical hoarseness is excluded). Hence the prime duty from the first moment of the malady, is forbearance from speaking and singing. With chronic inflammation there is found in the larynx-picture, through the speculum, not only redness, but also a thickening of the mucous membrane with increased mucous secretion. After a period of singing, the voices of some men and women singers seem to be muffled by a veil, which is either the symptom of nervous fatigue or of an increased mucous secretion.

In general, the famous or notorious nodules of singers are regarded as a professional disease. According to

the experience of famous investigators (for example, Gerber), they are also seen in persons who have never sung. These small thickenings on the edges of the vocal cords are a very frequent cause of hoarseness with adults as also with children. In singers, they often first strike the attention when forte singing and the intonation of upper tones are still accomplished successfully, while piano singing and singing in the middle register is poor. These nodules are found more frequently in altos and baritones than in sopranos and tenors. They should be operated upon only when very well demarcated—and above all this intervention should be undertaken only by an extraordinarily cautious and practiced surgeon.

Hoarseness can also be caused by chronic pharyngeal catarrh as produced through the use of alcohol and tobacco. Through the regular use of alcohol the "Adam's apple" loses its elasticity and the mucous membrane becomes hypertrophic and thickened. As a result of this, the voice becomes deeper (whisky baritone). The chronic use of tobacco leads to redness and increased mucous secretion in the hard and soft palates as well as in the posterior wall of the pharynx; pulmonary and nose smokers are especially in danger in this connection. To be sure, the careful and moderate use of tobacco and alcohol should not be narrow-mindedly prohibited.

Overexertion, colds and the abuse of the voice are the most essential factors which can be established as causes of the professional disorders of singers. Let us once more stress the fact that there is not a single disorder of a speaking or singing voice—from poor articu-

lation to detonation, from the tremolo to complete voicelessness—which cannot originate from a nervous basis, which cannot be intensified by mental causes, and which cannot be improved or cured through mental influences. This is precisely the connecting region upon which good pedagogues and good physicians can join in their psychotherapeutic measures instead of being hostile to each other; and this also is the exact territory in which the ambition of a teacher, stubbornly adhering to a method, must completely recede behind the exclusive consideration and care of a beautiful voice.

If one comprehends the disorders of singing according to purely clinical viewpoints (as Hugo Stern has recently done) then, besides phonasthenia, a type of functional disease, the groups which play a decisive part are as follows:

First group. The disorders in connection with general weakening diseases, such as stomach and intestinal disorders, gynecological and menstrual complaints, lack of blood and chlorosis. Some of these diseases or disease predispositions are in turn predisposed to exhaustion, to colds and to psychogenic functional hindrances.

Second group. Disorders which are produced through the local ailments of the naso-pharynx cavity, including the vocal cords.

Third group. Disturbances through weakness or lameness of the larynx muscles. This is the most known form of recurring lameness; however, we also know of isolated paresis (states of weakness) of the naso-

laryngeus inf. (Mm. cricoarytenoid post.), of the thyroarytenoid int. or the interarytenoid.

Not among the real vocal diseases but among poor habits can we count the so-called habitual vocal dyskinesias, such as hoarseness remaining after the termination of catarrhal symptoms, low speaking and whispering after weeks of a silence cure, the sparing of the voice in the course and after the completion of operations and also the same sparing of the voice with pains or itching of the throat. The permanent falsetto voice and the persisting mutation are to be considered as developing disorders. Moreover, nodules, tremolo and the squeezing can generally be attributed to a habitually false tension and position of the larynx muscles.

CHAPTER VII

THE TREATMENT OF PROFESSIONAL DISEASES

To give a complete summary of all the methods of treating professional diseases would be synonymous with the enumeration of all the methods which are, after all, known by the medical profession. Therefore in this work I shall attempt only to clear up several general viewpoints, and to present the most tested methods of treatment for the most commonly known professional disorders.

From our presentation of statements up to this point, it has indeed become entirely clear that a professional disease of a musician is very seldom the only symptom of a diseased reaction or of a diseased personality. The greatest mistakes of therapy, therefore, are made when the physician treats merely a local symptom, an individual symptom only, instead of considering the entire person with all his living habits, predispositions, tendencies to work, impulses, moods and characterological peculiarities.

It is not sufficient to hear the complaints of players and singers, even though the complaints themselves are often the essentials. A physical and a neurological examination, as well as the attempt to penetrate the psychic constellation of the affected person, are assumptions for any successful treatment. The weighty mental

significance of professional disorders should be considered as directly faced by the investigation of social and intimate factors, in regard to special disturbances, and also by the methods of instruction.

There is a great overvaluation of the bodily causes in the fact that generally the diseased person promptly undergoes some sort of physical treatment. Since we assume that a large part of the complaints named in the earlier chapters originate from nervous predispositions and are released through feelings of fear, of inadequacy, or also partly through the knowledge of a deficient or insufficient talent, then a purely somatic method of treatment in such conditions is fruitless. Of course, an equally important part is played by the misuse of the arms, hands, throat, lungs, etc., but in double measure with the constitutionally nervous, neurasthenics and psychasthenics; that is to say, a physical taxation which is still bearable for healthy people becomes an overtaxation for the nervously diseased and for the psychic-abnormal temperaments.

Likewise, the method of instruction is not without influence in the appearance and treatment of professional diseases. There are undoubtedly pedagogues with whom the specified diseases almost never appear—or, if they already exist, they can be removed merely through the method of practicing. These are the teachers who do not teach mechanically according to a sworn-by method, and are thus able to teach individually. These teachers, like good physicians, do not direct their interest solely to the progress of technique, but also see that the progress of mechanical accomplish-

ment proceeds parallel with the heightening of musical perception and with the individuality of the student.

This involves an understanding of the mental habits of a pupil and of his gifts of character and temperament, as they can be developed just from the personal companionship and coöperation between teacher and pupil and not from the systematic, scholastic relationship. The same holds true of the home influences, which can sin greatly against the aspirations and ambitions of ailing persons either through opposition to the work, or through social disadvantages, or through the lack of psychological and artistic sympathetic understanding.

Finally, the treating physician may also sin in the same sense, if he considers the mechanical irregularities as the only essential factors and forgets the mental influences. Especially in large cities, one nevertheless encounters clinics, loudly praised health institutions and specialists who believe they have found a universal remedy for occupational diseases. Here is celebrated the triumph of the mechanization of the profession, and it is already an indication of this inverted concentration, when, instead of a physician, a medical assistant, well practiced in mechanical dexterities, or a masseur, begins the treatment. Very often, one can assert, especially if the mentality of an artistically working person is considered, that *the essential factor is not the method of treatment but the one who administers it—not the "what" but the "how" of the therapy*. The same method which in a brief time may attain success in the hands of one who understands mentality, can fail completely in the hands of a scholastic bungler.

In the struggle for normal achievement in the musical profession, one cannot overestimate the work and the helpful service of a physician who possesses artistic knowledge and sympathy. But the activity of a pedagogue is more essential for the prophylaxis, the suppression or the early recognition of professional disorders. He should be an artist, should know physiology, should teach methodically and should understand humanity and its soul. The task is infinitely great and always full of responsibility, and in this respect often simultaneously earns final disappointment, trouble and ingratitude.

It is an old truism that not types and machines, but marks of individual artistic personality should be developed. With what difficulty and contradiction is this carried out in practice! The antinomies of pedagogy are endless; they are most effectively described by Wilhelm Münch. The pupil's will should be steeled but should also be bent in subordination to authority; his nature should be dependent and, at the same time, should still reveal independence and individual features; he should remain an individual, distinguish himself from the mass and yet should not lose the outlook upon communal life and interests. The pupil should perceive reality and at the same time should strive above it; he should acquire wide knowledge and should unify and amalgamate it; he should intellectually pass through various styles and finally retain the one that is personally close to or characteristic of him; he should be generally educated, yet, in music, should penetrate from the superficial to the depths; he should be universally informed

without his individual talent being crushed; the intellect should offer reciprocation to the feelings and the memory should be strengthened and taxed, yet simultaneously be freed from ballast and alien matter. He should engage in many different types of activity and yet preserve the unity of a related artistic and intellectual culture.

The teacher must provide for variety and yet cultivate consistency; he must penetrate theory with practice and the dull with the fluent; he must lighten difficulty through ease, and severity through pleasantness (also in the choice of methodical teaching-material); he must exert and utilize the power of his pupils, recognize their limits and assign adequate tasks to them; he must present difficult work and yet make it easy; he must offer expedients but stimulate toward independence and must teach sincerity and the ethos of the musical profession; he must enlighten them on the state of social misery and yet keep alive the youthful spirit, the joy, the *élan* and enthusiasm. The pedagogue should teach the same to various talents; however, he should neither detain nor reject average talent, neither bore nor drive supertalent into channels of comfort. With all this, he himself should always be fresh, active, firm, solemn, never aloof from the pupil and never too familiar, and at no time should he fail to maintain authoritative distance. He should justly distribute praise and censure, but always with the appreciation of psychological essentials and with the recognition and understanding of the constitution; he should be impartial and moreover should always extend his outlook

on the individual to include the class and the school; he must be youthful and remain youthful yet always be the one who is more mature, more experienced, and more capable of enduring hardships. He must consider the abstract intellectually and must be able to speak and teach practically and intuitively.

Everything in the world is burdened with the evil of relativity. To find the ideal pedagogue for every pupil— But this is absolutely impossible. Compromise improves this deficiency when all pedagogical desires and management are concentrated in the feeling of responsibility for the guidance of the young.

If we assume that many, indeed that the most frequent, forms of playing disorders usually originate upon the basis of a diseased predisposition, then we simultaneously feel that occasionally our treatment has very little power. We must make it clear that, especially in old cases, a cure that has been long withheld is no longer possible. Unusually poor possibilities of restitution are offered in precisely those typical diseases of violinists, pianists and cellists when they have, perhaps, lasted for more than a year. And in such cases, it is only just and tactful to the diseased and their relatives to draw their attention to the poor chance for a life profession; even with temporary improvement or cure of such cases there always exists the danger of relapses. Innate or intimate talents cannot be urged forward from the organism when the entire biological material is arrested in the individual.

As physicians and teachers, we are, just like the diseased themselves, victims of this inherited mass. With

the many disorders, which, as we have seen, develop from the foundation of an acquired nervous or mental inferiority, it is also difficult, from the standpoint of pedagogues or physicians, to realize an improvement through one's efforts alone and withal to have several guarantees for artistic perfection and the social usefulness of a person. Such attempts at treating nervous states or natures should commence in the parental home and should be further continued in the school in order that later treatment may have lasting success in view.

We know that most of all the named professional disorders, are, at least principally, caused by neurasthenic, hysterical and psychasthenic excitements. It cannot be emphasized strongly enough that for this reason also overevaluation of the physical condition, under any circumstances, must be avoided. The more seldom organic changes in the fingers, arms, muscles, nerves, pharynges and throats are found, so much the more frequently and intensely must treating physicians use psychotherapeutic methods.

The recognition of the connection between the body and the mentality is the prerequisite for a cure of the condition. First of all, the medical and pedagogical survey, often with the understanding of a person's soul, reveals the fixed amount of work-tax which is bearable by the student and which, according to human judgment, protects him against professional disturbances. The mechanization of methods, on the part of both physicians and teachers, is the enemy of all prophylaxis.

But the principal aim of the interest directed upon

diseases of musicians will have to be, not the correction of existing diseases, but the precaution against the appearance of diseases. If complaints already exist and if these are disclosed promptly and without timidity in a confident relationship between teacher and pupil, this early recognition of the beginning disease will offer the best weapon against the aggravation of the complaints. The heroic weapon in many cases can and often must signify a temporary, absolute rest of the diseased or seemingly diseased organs. In fact, with decided professional diseases—that is to say, those which have appeared preponderantly through overexertion—the prompt and complete suspension of the special professional activity is necessary. Just as there is no treatment of writer's cramp which permits further writing during the course of therapy, so likewise there is no disease of playing, during the acute attack of which, any playing would be allowable in general, or in the customary amount during treatment.

To be sure, to the deep, incisive measures necessary for these and for chronic conditions, there is offered an individual manner of consideration in the destiny of students. To some sensitive and depressed natures the prohibition against playing is synonomous with the fear of an inescapable fate. Most persons know of violinists' and pianists' cramps from the experience of others, from publications and from hearsay. Through special diversion and pacification, care should be taken that such a feeling of anxiety, often similar to a compulsion-idea, is not firmly implanted in the brain of students. Compromises must often be made with the under-

standing of these unstable persons. In view of the individual's psyche it is frequently not so good to pronounce a purely medical decision for complete rest, as it is to conceive a moderate practice period, broken by pauses. Such permission is sometimes the only support, the only hope of the beginning musician, if he feels threatened by the specter of professional neuroses or the suspension of his profession.

With this view, we shall present in what follows a general summary of the essential methods of treatment and shall remain conscious of the fact that more or less often these mechanical processes are only more convenient vehicles for the transmission of mental influences.

1. Nervousness and Extreme Psychic States

The chief requirement for the revellent treatment of nervous and psychic disorders is the accurate diagnosis. Only one who, with all the means of examination technique, is able to eliminate organic disease, should approach the treatment of nervous states with a definite hope for success. The symptoms and subjective complaints of functionally diseased people are often quite the same as those in organically diseased people, and besides the negative objective condition it is often only a certain type of representation, one stressed by fear, that leads us to the right track. Likewise, diversion has such a decided influence in the named nervous states upon the removal of subjective indispositions, that in the contrast between the discussed complaints and the observed health in diverting society, a new indication

of the nature of the disease is presented. Problems of destiny, love and marriage, economic cares, personal, actual or imaginary difficulties in the progress of study or of an artistic career and the intimate worries and misfortunes are, in the entire store of our diagnostical reflections, especially important to the physician. Only one who can diagnose, can treat.

To the general fundamentals of a nervous predisposition or a nervous disease in a musician are then added the burdenings of exhausting study and professional life. The analysis of physical habits and mental complexes by the physician and teacher must now be simultaneously made. We must always differentiate, and generally taking all the named causes as a basis, we must be able to differentiate even between a nervous predisposition and acquired nervousness, in the sense of overexertion and exhaustion diseases. In regard to the methods and prospects of treatment both should be judged unusually different.

We shall least of all attain lasting success with those conditions of endogenous psychic neuroses that have developed upon the basis of tainted or hereditary burdening. The deviations from the normal of character and of the mental constellation, of the environment, of emotional life and of impulses are already founded at birth in pronounced psychopaths. They are born diseased, with every prospect for psychical disorders and social inferiorities. In these cases, treatment measures are too late if one waits until the first symptoms of complicated character tendencies and mental states are manifested, perhaps in the course of study.

The problem of professional qualification would be broached more frequently than it is in severe innate stigmas, if we did not know that precisely the supertalented present abnormal types of neuropsychic constitutions. Though affected with all the symptoms of anxiety feelings, irritability, whims, caprices and mood fluctuations, a mentally inferior person may very well be a phenomenon in his work and in his artistic activity; and it would be cruel to these people and to the world, which would sometimes receive the artistic achievements of such psychopaths, to deny them the possibility of a musical profession. Though this deals principally with incurable states, we must nevertheless act in an enlightening manner both upon the diseased person and upon his environment and introduce helpful dietetics, and not only with respect to physical and nutritive value, but also in regard to work and the mentality. It is an achievement which can be attained only by one who has studied into the depths of the finest fibers of a person's mental life.

The influence of surroundings is of extraordinary importance. Psychopaths usually descend from psychopathic parents. Hence the temporary, or sometimes even the lasting, detachment from the environment may be necessary, and the mental influence of a physician, friend or wife is often essentially better than that of the parents. In this sense the teacher can also exert a maximum influence in the art of psychical persuasion and healing education. An encouraging word at the right moment in school can have a stronger effect in a positive sense than the depressing influences of an unhappy

and degenerated home can, in the course of months, have in a negative direction. Of course, the influence upon the adult is already more difficult, or still less permanent, than upon the immature person. Hence the successful work, even of good physicians and pedagogues, can be only temporary.

But finally, music, when it is part of life's actual necessities for the affected person, is the best healer of physical- or mental-reluctance feelings. Only the untalented should be dissuaded at an early age from hurling themselves into the exhausting whirlpool of practical musical participation; for those with musical talent, new paths to satisfaction in the profession and in existence are constantly being opened, cutting directly through the obstacles of the degenerated foundations. We know from the fates of great musicians who are medically considered to be border cases, that the powerful intimations of the grievous destiny resting within them have released the great works and creations.

As far as we can advise, we would urge a correct, individually adapted distribution of rest and work, of exertion and recuperation; we would try to eliminate any nourishment or activity that has an irritating or exciting effect upon the brain and nerves; we would provide for the inner capacity a mixed but unstimulating diet, abundant sleep and the hardening of the skin nerves through air-baths, rub-downs and moderate athletics; we would force, through our educational and enlightening influence, a certain psychical hardening; and we would seek to free the diseased

person from his conflicts so that he may pursue the correct path of life with knowledge and consciousness.

Our consideration of the individual case should include all those prescriptions which are occasionally recommended as universal remedies, such as the temporary abandonment of a profession, the departure of the sick person to a spa or to the country and the trial of a protracted journey or similar undertakings. One should insist upon months of treatment in the seclusion of a hospital or in a sanitarium only in the severest cases of a psychopathic constitution, perhaps in cases where cramps, compulsion-ideas and melancholic attacks are in the habit of occurring periodically and without adequate grounds; and furthermore, in such cases the question of marriage must be answered in the negative. This is all the more essential as those having definite psychopathic tendencies gladly associate with other psychopaths. A marriage of such double-sided burdening forecasts a similar or harder fate for the entire life of the offspring.

Our treatment methods for the average nervous person have brighter prospects. On the whole the mental influence, the so-called psychotherapy, has a most decided effect in these cases. Even the declaration that the case in hand is a problem of a temporary ailment, when authoritatively made, can shorten the duration of a nervous ailment, and above all can stop the hypochondriacal focus of an individual upon his disease. In mild cases, the non-treatment and the ignoring of individual complaints, such as heart-throbbing, stomach disorders,

headaches and the like, may even have a better effect than local treatment of the particular organs which one really knows are not diseased.

The principal requirement for the treatment of an exhausted person is naturally the order for absolute rest or comparative rest. Here also, the restriction of professional activities should not become a systematic command. But the insertion of rest periods during the day and of naps after meals, the order for strict regularity in retiring and arising, for working and walking—these measures usually intervene in the mode of life favorably to the state of health in nervous people. Exhausted persons need a working plan, discipline in meal hours, work and sleep; and usually this hygienic habit of life is achieved without great compulsion and without the interruption of professional activity. As far as possible, all excitement should be avoided for the diseased person, and when it is practical, his environment should be compatible with the essence of the musical activity. Also clamor and excessive noise should be excluded from the environment.

In this respect, large cities offer special stimulus to the origination and constantly renewed flare-ups of neurasthenic states. In the country, there are fewer nervous people; in the country, the nervous city person soon becomes free from the symptoms of irritability and sensitivity.

A special diet is hardly ever to be recommended. Only the physically declined and undernourished require a fattening diet, and only severe forms of nervous weakness demand the prohibition of tobacco, coffee or

tea, which stimulate the heart vessels and nerves. In view of the strong influence which alcohol has on the emotions, this form of pleasure will be first forbidden, since the reactions of nervous people usually are especially pronounced, in the form of excitement, reckless moods, will disorders, impulsive actions and impetuosity. The alcohol probation may very well be set as a reward, when the acute state of exhaustion is passing away.

The use of many highly praised nerve tonics is generally effective only for mental reasons. Their general prescription is beneficial only to their manufacturers, not to the diseased. A change in the sexual life of the nervous being, in contrast to the normal indulgence while healthy, should not be recommended either on health or psychic grounds. Baths, rubbings, showers and massages have refreshing effects on persons with healthy vascular systems; mild sedatives (bromin, valerian and others), taken in moderate regular doses, can generally restrain the too ready response to emotion in nervous individuals. The prescription of opiates for a long time should be warned against; here it is preferable to use warm, full packs, hot foot-baths and the like.

Individual complaints which are particularly stressed must occasionally have special treatment. Now great caution should be employed, since very often the treatment itself of the organ immediately suggests the idea to the diseased person that this organ is actually diseased. If a nervous person's head is electrized for weeks because of headaches or if irradiations on the heart and

stomach are ordered because he suffers from heart-throbbing or from pressure on the stomach, he is then easily convinced that a question of a serious physical disease has arisen. One must, on the contrary, attempt to divert the attention of the diseased person from the imaginary location of his suffering. In a functional ailment it is a matter of no consequence which means are used in treatment, but the essential matter is who gives the treatment. The dialectics of a physician who understands how to recognize and analyze his diseased patients can have a greater curing effect in an hour, than months of the so-called treatment through an automatically functioning apparatus.

To lay down definite procedures for certain complaints would be senseless and would signify the lack of understanding of precisely the most essential factor in our medical knowledge: namely, of psychotherapy. This mental treatment commences even during the examination with explanation of the disease symptoms, with enlightenment upon the psychic connections, with the advice and with the manner in which the physician calms the fears of the diseased person.

Confidence in the physician and in his readiness to help (without material background) is the first provision for mental impressionability. The second is the strengthening of self-reliance and the infusion of new power through which the diseased person himself can free his personality from sensations, moods and complaints—plus a form of counsel which is evidently curative even to the layman and which can release him from the spell of the fear of disease. The individually

treating physician should be concerned with how this can be done in the individual case; with the manner of substituting new life-strengthening thoughts for gloomy and hopeless grievances, and new work for alleged fruitless and dejected activity; and with the method of attempting, in place of a lack of initiative and concentration, to establish the continuation of intellectual and artistic education, sometimes even outside of professional activity.

The direction of purely intellectual concentration upon the physical sometimes leads to the suppression or control of intensified physical movements of expression. The necessary education succeeds in restraining or removing the haste in speech and movements as well as the restlessness and the trembling of muscles, and through this suppression of physical unrest, in fact, succeeds also in making the patient's inner being calmer, in making his character less emotionally tense and his sleep more natural and less interrupted. Through instruction and diversion, affective disorders likewise can be often favorably influenced, as can physical pains, which are frequently but the substitutes for mental uneasiness.

To be sure, one should not hesitate to send to another, perhaps no better, psychotherapeutic doctor, patients upon whose particular nervous constitutions no influence had been exerted after months or weeks. There are even certain types of persons who wish to be treated in a definite manner, which is not adaptable to all physicians. Some, desiring only mental pacification, come perhaps upon a doctor who sees the cure in elec-

trical apparatus. Others, wishing local treatment with all the modern technical innovations, may happen to come upon a physician who comprehends the mental connection with the suffering, and therefore only wants to cure it psychically. It is indeed only the power of authority and of reputation that procures the enormous popular esteem for the harmful cure-bunglers.

Without believing in the special value of individual procedures, but with the feeling that mental influence very often comes through the mediation of physical therapy and that alternations are very often in order, I name several of the best known physical methods: Ablutions with vinegar or French brandy, lukewarm full or hip baths, hot full packs of the torso, cool water flushing in the morning, salt, pine-needle, brine or carbonic-acid baths, reclining cures, air-baths, "Müllering" [1] in the morning, active and passive exercising, mild galvanization of the head for the suggestive soothing of pains, general faradization for stimulating a feeling of strength in the body, the Franklin douche or high-frequency currents against general irritations, head sensations and the like, athletics and gymnastics, outdoor calisthenics and dumb-bell exercises—especially by persons who are accustomed to indoor activity—for the animation of the vascular and muscular apparatus, general massage, particularly in cases of strongly marked pains; and finally temporary, recuperative sojourns in mountains of medium height, in country or forest air, as well as in winter resorts in the high mountains.

[1] *Translator's note*: Jörgen P. Muller (1866–), a Danish gymnastic teacher who originated his own physical-culture system. His exercises are to be practiced 15 minutes every day and are known as "Müllern."

Among medical remedies—besides the calming ones—iron and arsenic are especially favored because of their tonic action on the nerves; in great fear and depression, opium, pantopon or codein occasionally cannot be avoided. (See also Appendix.)

All these treatments are more or less concealed measures of psychotherapy. It must be left to the tact and delicacy of the physician whether he will deceive a diseased person in this manner or not, since mental states are treated by physical aggressive methods, during which the diseased person believes that he is actually being treated for physical ailments. This method can act beneficially and can also be directly injurious. With persons who, on the whole, can be inwardly reached through mental consultation, explanation and eventually through combating the opinion of themselves and their suffering, for which they had acquired a liking, we must systematically demand candid explanation and treatment directed upon the mental origins of the disease. Psychotherapy is the essential method, while physical methods of treatment are the non-essential ones—even if they are not always entirely unavoidable.

Just those psychoanalytical considerations and treatments of nervous ailments, which have been fostered by us for the last two decades, compel us to probe with special perseverance for the mental conflicts slumbering in the background of so many neuroses, and from this point, to shape the treatment of the causes of dissension between "wanting" and "being able." Through methods of mental treatment we are able to combat conditions of excitement, to gain influence over physical

symptoms of irritation and paralysis, to banish affects of fear and to expel compulsion-complexes, and in such methods we do not need the indirect route through mechanical means. We must attempt to enlighten the diseased upon the psychical origin of his ailment, must seek to convey to him the knowledge that the physical complaints are often merely veiled mental ones, must fortify his health consciousness and give him the understanding of the hope for invigoration and cure.

The diseased person must gain the correct judgment of himself, of his state of health, and of his adjustment to life's circumstances. He must learn to value accurately the influences of the outer world and to ignore them—at any rate, to bring them into accord with his particular manner of reacting.

We must realize that the diseased person does not become rooted to the symptoms of his sickness, but that he molds himself, his work and his life independently of the supposed or actual complaints. He must be able, even in a depressed state, to discover—through diversion, education and interest in other activities—life's values, must learn to endure with fortitude moods and affects to which all persons are susceptible, and to regain both self-confidence and self-control. One can learn to focus his thoughts upon a certain complex of ideas, and can likewise learn to dispel this concentration, according to his own will. This training of the entire physical-mental apparatus can be enforced through a definite cure, at times adapted to the personal circumstances.

Among these methods of diversion is also included

a change in the type of work—indeed, a change in the tendency to work. If the intellectual and artistic worker completely concentrates upon a purely physical activity such as farm work, wood-chopping or sawing, he may sometimes find just as much benefit as the physical worker and overworker finds in the convenient mental exertion of visiting art exhibitions and meetings, or of taking up botany and instructive courses. Not only the mood, but also the feeling of a certain self-significance and of personal worth are thereby raised and the will for work and life increases.

Into the general psychotherapy of those severe psychical symptoms described by us—among which perhaps can be counted pronounced depression, states of excitement, cramps, fears of examination, stage-fright and compulsion-complexes—a few more special methods will have to enter. The form selected depends upon the reaction capacity of the diseased, as well as upon the technique and practice of the doctor. Sometimes it is sufficient to impart the knowledge to ailing persons of the nonsense of their subjective feelings and ideas, by means of dialectic conviction (persuasion). In other cases it is advisable to effect a pacification through encouragement and in frequent and intense conversations (wakeful suggestion).

Occasionally just the anxiety before tests and public playing is concealed and not a realized, conscious avowal of immature technique or lack of talent. In such cases, one must consider a frank discussion supported by the experience of the teacher, and, if need be, a postponement of the test or concert.

With actually existing talent and an especially good technique, stage-fright is best frustrated through hypnosis. In hypnotic states, essentials are sometimes discovered concerning the causal factors of the affliction. Then, upon the grounds thus won, one succeeds not only in removing the disturbing elements, but even in obliviating them, and one further succeeds in deadening the essential impetus-force for the disease, namely, expectation-fear. Through hypnotic influence we bestow upon the diseased person the confidence in an appearance, insensitivity to hindrances and fear conceptions, steeling of the will-power; and we also liberate sources of health-power which till then were useless to the affected person.

It is a problem for good hypnotists—the advertised mesmerists and magnetologists do not belong to this category—to make the diseased person and his entire adjustment in life, in spite of his temporary submission to the authoritative will of the doctor, not permanently dependent upon the hypnotist. After the diseased person has gone through hypnotic treatment, he should confront life's demands with greater strength and fortitude and more self-reliance than before. He should also be trained to settle conflicts of existence with his own personality, and to follow independently his own prescribed course as an artist and a man.

2. Diseases of the Motive Apparatus (The Actual Occupation-Neuroses)

According to the theoretical considerations with which we introduced the chapter on occupation-

neuroses, it will be comprehensible if we do not expect all that is helpful from the local treatment of those same disturbances which strongly impress us as the actual disease, without really being it. Under the signs of muscular weakness, muscular pains and cramp conditions, most professional disorders present themselves as localized symptoms of general neuroses. Therefore, in nearly all cases, the treatment of the entire personality will be more essential and necessary, than the treatment of the arms or fingers. I know that this view is heretical and not favored by the polypragmatists (those who treat with varied means); but in a mild form, according to the existing disease case, it may nevertheless be valuable to the therapeutic physician.

In newspapers or in special publications we are always reading advertisements of the following purport: "Tremors, Cramps and Weakness Positively and Quickly Cured through Own Method of Cure-Gymnastics." "Healing of Violinists' and Pianists' Cramps in a Short Time by Preventive Therapy." Testimonials of cured individuals are annexed, as well as expert opinions of professors. Or one sees even the following: "Curing of Incurable Writer's Cramp and Allied Motive Disorders by Massage and Exercises According to My Own Method." The suggestion of a slogan and that of the represented curative miracles here join in friendly alliance and perform their operations. This is not always harmful when easily impressionable and suggestible persons are concerned, but is certainly more dangerous when a "case" is concerned that should be specialized and differentiated humanly, as well as

medically. And herein always rests the essential point.

The number of professionally diseased who have improved without material treatment and the number of those who, in spite of treatment, have remained professionally diseased would probably correspond approximately with the numbers of those who improved with systematic treatment, and of those who contracted a chronic professional disease through lacking or poor treatment. From writings and from one's own experiences, rich though they may be, it is exceedingly difficult to form a scientifically founded and practically certain judgment upon the specific treatment of professional irregularities. Mechanical treatment under the supervision of a suggestively acting physician can be effective upon psychical grounds, and not otherwise are to be valued those special cure-successes from places which carry on an unusually active propaganda in regard to professional diseases and their treatment. On the other hand, it can by no means be denied that, besides the purely mental influence, that of mechanotherapy (mechanical treatment) and the prescription for complete professional inactivity are also valuable measures in the battle against professional diseases. I regard it as certain that, even in the most chronic case, the pacification and the treatment of fear affects in connection with a moderate rest cure, can have a healing effect. And I likewise consider it just as probable that pure mechanotherapy unqualifiedly fails if it has no regard for the entire complex of mental disorders in the mechanism of professional disturbances.

As has been already stressed, the order for rest should

not follow a schematic plan. A short period of practicing, which indeed can usually be endured without complaint, cannot cause so much harm to final improvement or cure, as the interruption for months of an artistic profession can cause to the mood and life-desire of the diseased. Nevertheless, in cases which have already lasted for months, the absolute suspension of activity, as ordered by the doctor, frequently cannot be avoided, especially when even the first undisturbed minutes or quarter hours of playing lead to violent complaints. Then, of course, a rest of many months should be expected, and the physician, with complete frankness and without circumlocution, should communicate to the diseased the prospects of treatment. These prospects are better in cases when a mental conflict and a fear conception are in the foreground of the disease than when the professional disorder has affected a mentally and nervously sound person, since fear and similar reluctance affects can vanish through psychical treatment and clear the path for stronger desire, greater self-consciousness and a suppression or displacement of subjective complaints.

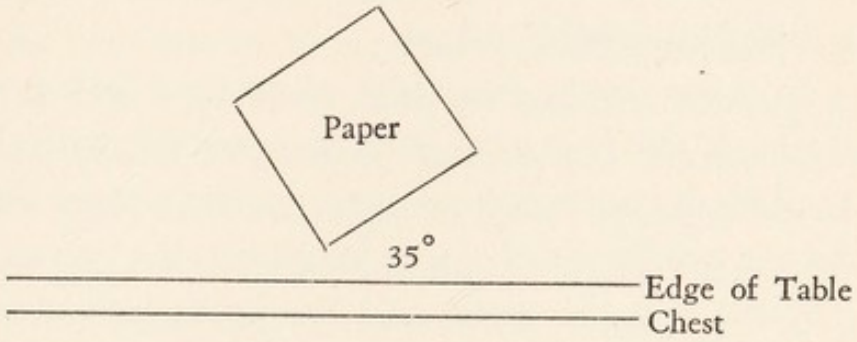
From hundreds of cases we know that the prognosis of professional disorders, when they have become chronic, is bad—at least doubtful—and that relapses must be expected. To the anxiety psychopaths the prognosis will at first be put in a favorable light; on the other hand to the robust, the possibility of not getting well will be revealed, if necessary, by means of a roundabout communication through relatives. In violinists and pianists the prospect of being cured is never so bad

as in the prototype of professional neurosis, namely, writer's cramp; in violinists, moreover, it is still better than in pianists since, as has been already indicated once, the violin is adapted to the size and configuration of the hand, indeed during the growth of a musician (half and three-quarter violins), while there is no similar accommodation in keyed instruments.

A part, an essential part of the treatment also consists now in the early perception of the suffering and in the attempt to prevent the first symptoms through hygiene and a correct method. For psychopaths and neurasthenics are to be added the general directions for treatment outlined in Chapter I. General invigoration, roborants and inurement are of good service here, and occasionally, just through a rest and forced alimentation, one can attain success in exhausted professional neurotics, without generally being concerned with the local symptoms.

Many methods have been presented for writer's cramp which are effective in connection with detachment from the profession; thus, for example, a complete change of the position in writing, in guiding the pen and in placing the hand upon the table. Zabludowsky recommended the placement of the chair at an angle to the table and a straight inclined posture of the writer with head erect; if his right arm lies parallel to the edge of the table, he thus receives better points of rest. In view of the cramp disorders which are produced through flexor contraction of the fingers, the pen can if necessary be held by the middle and index fingers. According to Dilcher, the four-sided penholder

may also be occasionally recommended. In the writing cure recommended by him, the paper should lie obliquely at an angle of 35 degrees to the edge of the table; the paper should be directly in front of the chest, the feet should rest with both soles flat on the floor, the upper part of the body should be held easily upright without the chest touching the table, three-fourths of the forearm should rest lightly on the table and the eyes should be 30 cm. from the paper. See diagram.



After a complete rest from writing that, according to the severity of the case, must really last for days or weeks, one commences to write round capital letters. Sometimes the change from pen to pencil writing, and occasionally the transfer to typewriting, cannot be avoided. More seldom, one must resort to the so-called artificial holding of pens or to the thick cork penholders; that is, to the Nussbaum bracelet or similar contrivances, which fasten the penholder to the hand by means of a small apparatus, so that without the participation of the hand muscles one writes from the wrist, employing the extensors instead of the flexors.

Medication is senseless. Treatment through vibration, massage, hand-bathing and active and passive exercises

may be attempted, although, to me, they seem to be more effective in the sense of heightening self-confidence and the feeling of power, than specifically. Of the many praised methods, that of Swedish gymnastics is still the best.

To remove the feeling of tension or an actual muscular tonic change, Hartenberg has recommended the application of an elastic bandage to be utilized from 40 minutes to several hours daily. Even in a case of hypertonic tension of the biceps, I have seen this have a fairly successful effect.

In new cases, Benedikt aims to effect a quick cure through the injection of a two-percent carbolic solution at places sensitive to pressure in the nerves and muscles. As the predisposed places he names the muscular tendon insertions at the wrist and the pronators and supinators at the elbow point. Besides massage and exercise, autogymnastics should be valuable in chronic cases. Moreover, the healthy hand should serve as the standard and should sense the amount of resistance in the diseased hand.

With the assumption that the essence of the disorder is to be sought as cortical and that almost all neurotic professionals are sufferers from paratonia (Callevaert and others) one will always attempt to eliminate the constitutional inclination toward cramps and to correct the incompetence of the musculature for relaxation. Mechanical, hydrotherapeutic and psychic methods must be closely intermingled. But it is the physician and not the method that brings alleviation. Precisely because of psychical reasons it is usually ad-

visable not to ignore completely the diseased or apparently diseased limbs. The psychomotor procedure of Williams is good and can be individually varied—passive, large and wide movements in the large joints and the gradual transfer of these movements to the muscles affected by the cramp, until the complete personal control of the possible strength and endurance of these movements has been reached. Thereafter the transition to the handling of apparatus, dumb-bells, and finally the attempt to write capital letters.

Roethe permits one to write immediately, which has a good psychical effect—at first, of course, writing in the air, then simple strokes on paper. He would (this indeed holds good only in incipient cases) effect a "cure" in a few weeks. As the fundamentals, this author also considers psychotherapy, change and education to a more patient and self-confident contemplation of life, pacification and diversion.

Pain, which is not seldom manifested in writer's cramp, may sometimes necessitate the well-known pain-soothing measures, such as hot air and incandescent light, baths and especially diathermy (deep electrical irradiation). The stable galvanization of the whole arm or of the arm nerves also occasionally seems to have good results. The specific effect of an electrical current can indeed hardly be spoken of; but if patients feel only temporary relief from mild and perceptible galvanization, then this has already been of extraordinarily good service for future treatment. To be sure, one should be warned against the faradization of the muscles, through which the tonic spasm, already auto-

matically intensified, and the easy susceptibility of the muscles are even futher increased.

Toby Cohn, one of the best specialists in the field of electrotherapy, attempts to attain a special method of treatment of occupation-neuroses, according to the particular symptoms in the foreground of the disease picture. He differentiates the sensory form, in which the diseased persons complain of deafness sensations, indispositions, itching, formication or pains, from the motor form. From the latter, which therefore preponderantly represents a disease of the motive nerves, he again distinguishes the paretic form (which hardly enters our consideration) with its quasi-lame weakness of certain small hand muscles, the spastic and the most frequent form with the cramp-like contraction of certain occupation muscles, and the tremor-like form which occasionally exhibits trembling. We know that among musicians the individual symptoms of these occupation-neuroses are strongly intermingled, and that a pure form, which perhaps attacks only the sensory or motor nerves, rarely occurs.

For the treatment of isolated pain sensations and paresthesia, Toby Cohn recommends the faradic brushing of the hands and fingers (against which I personally caution, since motor complaints almost always appear, and can be aggravated through faradization), and, in addition, the stable or unstable galvanic anodic treatment. For the spastic form—the, so to say, specific disease of the motive organs—he recommends with justice the sparing of the cramped muscles—those,

therefore, already in an overexcited state—and not causing contraction first through electrization. The antagonists of the diseased muscles (that is, the extensors in spastic conditions of the flexors) can be strengthened through faradization and, if necessary, even through the interrupter electrode. In such cases electrical hand-baths or the four-celled baths can also act usefully. For local baths a galvanic current is utilized, with the cathode in the water and the anode resting on the neck. The power of the current (with the skin protected by wrapping the electrode in cotton) should be 15 to 20 ma., and the duration should be from 10 to 30 minutes.

On the whole, there is greater success to be attained through a general treatment, in connection with electrical methods, directed upon all the nervous habits of the patient. Particularly here, the attention and the interest of the neurotic are not drawn only to the apparently diseased organ. Hence, for example, the arsonval [1] currents and the Franklin douche.

That which has been stated in the foregoing about writing disturbances, on the whole, also applies to the disorders of pianists, violinists and cellists. In these cases, the first recommendation is absolute or comparative rest, and, if need be, with the affected arm resting in a suspended position or carried in a sling. Most ailing persons suffer less pain and present fewer complaints when their arms are supported in a horizontal position (that is, perhaps, as in a Napoleonic gesture)

[1] *Translator's note:* A. d'Arsonval (1851–), French physiologist and physicist.

than when hanging loosely at the sides. The reason for this is probably connected with the change in blood circulation caused through suspension.

After the rest there should be resistance movements, dumb-bell exercises, gymnastics, massage and, if necessary, pain-soothing applications. A temporary abandonment of professional activity, especially with finished pianists and virtuosi, can likewise act favorably, as also the temporary interruption of so-called tours, upon which managers, for commercial reasons, set a very great value, while no importance is attached to the hygiene in living and the dietetics of work. In such cases, athletic activity for three months or a recuperative cure in the mountains, is better than any exclusive treatment of the arms. If one recognizes a professional disorder as a convenient excuse for lack of talent, then one should, more than ever, refuse treatment.

With disorders of violinists, pianists and cellists one can also have occasional success with the use of powerful mechanical stimulants and moderate hydrotherapeutic measures with low water temperature (hand-baths).

With electrical methods, it is also now essentially a question of the soothing effect of the anode in galvanization. The galvanization of the neck portion of the spinal cord and the dorsal portion of the spinal cord as well as of the nerve plexus at the neck are not theoretically unfounded.

If the pains are excessive and if painful sensitivity of the nerve stems and of the muscles can be pointed out without suggestive influence, then occasional injections

of common kitchen salt solution in the sensitive parts have an improving effect. In the very rare cases where one is justified in assuming the existence of a nervous inflammation, one can also attempt a serological cure with vaccineurin or albumen.

We have sufficiently cautioned against the purely mechanical treatment, as also against the purely local consideration of all musical profession-neuroses. Nevertheless, sometimes—that is, very frequently because of the sensation of the diseased person—the arm and the hand must be given special treatment. For galvanization of the spinal cord or a psychical pacification through hypnosis is least clarifying, when complaints in the hand and the arm constantly recur.

Seen from this angle, the methods of Woldemar Schnée also merit occasional consideration, although they appear dangerous to us when used systematically and schematically because of the preponderance of the manual-physical consideration. Schnée attempts to introduce the training for the perfection of the hand and its individual movements. According to Schnée, the skin in the middle of the hand between the fingers offers resistance to the stretching or expansion of the fingers in wide stretches and chords—and likewise, the transversal ligament bulk. The weaker parts are the stretching and spreading muscles. Through the removal of obstacles and through the strengthening of the weaker sections—that is, through a systematic expansion of the skin and the ligaments in the middle of the hand, and through localized mechanical strengthening of the spreading and stretching muscles in the

hand—Schnée, according to his statements, achieves increased elasticity of the skin and of the ligaments, as well as the greater efficiency of the spreading muscles that are so necessary to violinists and pianists. Similarly he advises rotary movements of the fingers and of the wrist and resistance movements of the stretching musculature, if one lacks free and direct mobility of the joints. Through this he effects an improvement and acceleration for lifting the fingers in violin, piano and cello playing.

In those of Schnée's cases which I myself have observed and verified, the duration of treatment was so long that one could even have reckoned upon an automatic withdrawal of complaints (with the interruption of playing). His theories and methods should have a place only within the frame of the entire treatment. Then, and only then, can they be of good advantage.[1]

Zabludowsky has recommended in chronic professional disorders of pianists the use of a piano with smaller diapason (Janko's keyboard). I have had no practical experience with this method, but would like to characterize it as doubtful (like Pilcz), since the future virtuoso is always compelled to play upon a piano of different compass, and later to study again on a standard keyboard. The former is hardly practical, as the instrument must always be carried about; the latter presents the danger of a relapse in the process of

[1] The methods of Rathsach and others are also occasionally beneficial in individual cases. It is more important, however, for the conservatory, *a priori,* to eliminate playing disorders, since it is actually being done through the teaching methods of Flesch, Becker, Mayer-Mahr, Kreutzer, Schnabel and others.

re-learning. Besides, the "finger-memory" might be so imprinted that then an entirely new technique is necessary.

Likewise the old method of Fritz Möller, which was once highly regarded, should be discouraged, since it regards the motor neuroses of pianists in an exclusively mechanical light. Möller has constructed an apparatus which represents a system of levers and enables one to stretch the fingers individually in the basal joints, in order to acquire the most nearly complete independence of each finger. First of all, the method is painful and strenuous. Then again it leads easily to inflammations. Finally, through this interesting practice, only the one process of automatic joint-movements is considered, and only this mechanism is advanced. But the essential factors of the disturbance are not the exactitude, velocity and power of the individual movements, but the synergetic procedures of coöperation between the small and large hand muscles, between the flexors and the extensors. There is established the concept not of the correctly functioning movements of playing (which would be good) but the idea of the disease (which, according to our view of the neurotic basis of most professional diseases, is dangerous and criminal).

Even Hoffa's occasional success through the combination of massages, exercises, douches and electrical currents cannot cure us of our mistrust. We must cure not diseased hands, but hands of diseased persons who incidentally are violinists and pianists.

In spite of all the authority and experience of this scholar, Zabludowsky's recorded conceptions in a thor-

ough study (*Volkmanns Sammlung,* Nos. 290–291) must also be considered obsolete. In pianists' diseases we are not dealing, as he thinks, with a traumatic inflammation (that is, perhaps originating from overwork) and the onset of the disease, disregarding exceptions, is not a sudden, but a slow, stealthy one. And, when the pianist complains of pains and cramps even beyond his pianistic occupation, the disease then no longer belongs to the territory of specific functional disorders within our considerations. Zabludowsky is more concerned with the rare and severe forms of work paresis and with the neuritic affections than with the coördinate neuroses. His advice, in reference to acute, sub-acute and chronic diseases, should therefore be taken only with great reservation; we believe that more frequently the complaints of players arise upon the basis of a nervous constitution, than that, on the contrary, the defects in playing first cause the general neurosis. This is the decisive distinction between prophylaxis and therapy.

3. Treatment of the Less Common Professional Disorders

In all the professional disorders not yet mentioned, treatment, or the attempt at treatment, is essentially easier than with the, so to say, specific musicians' diseases. To a great extent, the therapy of the professional disorders named in Chapter V consists in the recognition of their causes and in symptomatic treatment of the principal diseased organs. No special instructions need be given in regard to that, as they would widely

overstep the scope and the purpose of these discourses, and finally would aim not only to present all the inner methods of treatment in medicine, but would also have to include special professional hygiene.

Every musician—both the touring musician and the one who is settled in an arranged commercial life—must learn the demands of his organism and the beneficial distribution of work, which leave his body relatively sound and his nerves strong and impressionable, yet which, on the other hand, do not deprive him of the excitability, impressionability and receptivity that are especially necessary for his work. Such means must individually be discovered, and cannot be schematically dictated.

Usually, this principal requirement of sound music practice is undervalued or neglected by the constantly increasing groups of musicians, who in the struggle for life are condemned to activity at night and to unhygienic, smoky public places and who are exposed to colds and exhaustion diseases and to weakening of the organism through alcohol and tobacco, as well as to all infections that befall exhausted constitutions. Precisely among these musicians of cafés, moving-picture houses and theaters, we find, moreover, many older persons, or those who because of their feeble constitutions are barred from the road to socially higher and worthier positions. If these frequently consumptive and, in spite of their feebleness, continuously working persons do not succeed, either through the individual's special talent or through luck, in breaking away from their work *milieu,* then they not only succumb more

easily to all those nervous disorders which are the grounds for actual profession-neuroses, but also to the physical diseases which gradually prevent any activity —also, therefore, the professional activity in music.

It is nevertheless astonishing that professional musicians of ensembles in large cities, in spite of unmitigated exertion of their powers, fall sick so much less often with profession-neuroses, than those who are studying. This also proves how much a sound technique and a tested method can do toward the prevention of such disorders.

Indeed, we have heard of virtuosi who after long years of touring the world have nevertheless been compelled to abandon their profession because of constantly recurring complaints in the arms. Then these musicians have often gone from instrumental playing to conducting. Moreover, this is the road which should be kept in view by highly gifted, universal musicians; for it is indeed characteristic of the symptoms in professional disorders that they always attack only a certain group of muscles with a definite manner of mechanical coöperation.

It is therefore quite possible that a pianist with incurable playing cramps may become a healthy violinist or—and this instance is still more frequent—that an instrumentalist, ruined by his professional disorders, may become a conductor. It has indeed never happened that a conductor, except for temporary pains in the shoulder muscles or in the joint apparatus, should exhibit severe and entirely professionally caused disease symptoms.

Such and similar general reflections assume not only the correctness of the treating physician's general examination technique, but also an insight into the inclinations and the ability of the diseased person. There shall be no discussion at present of the general irregularities which obstruct the musician's professional path, nor of the disturbances of the sensory organs which are first displayed in professional work (as pain or tearing in the eyes after long reading) without being inwardly dependent on it. Only individual complaints which occur particularly often shall be mentioned, at least briefly.

For example, there are the cellists' complaints in the left thumb, the violinists' thumb and index finger of the right hand, and also among violinists the redness of the skin on the left side of the neck. This redness comes on the places which are exposed to the edge of the instrument or of the bow to the strongest, or at least to the temporarily most continuous, pressure. The epidermis of the skin is irritated and painful during the stage of redness; but, in the course of weeks and months, nature forms its own best protective means, namely, the hardening of the skin in the form of calluses. These calluses are in general not painful and at the worst occasionally cause vain women to make a complaint which can provide a motive for treatment. One should refuse such treatment; a person who values beauty above art should not be a musician. Only in the first stages of this superficial skin inflammation, especially when mild glandular swellings are felt in the neck, can the usual inflammation-preventing prescrip-

tions be effective; for example, poultices of acetic argillaceous earth or alcohol and applications of salicyl powder, while faithfully following the advice for brief pauses. Greasing the skin with vaseline as well the habitual rubbing with alcohol or French brandy can also have favorable results in advancing the resistance-capacity of the skin. It is the instructor's concern to control and procure relief for contingent coarseness and poor positions of the chin rest, the bow, etc. Violinists who actually suffer pain in the neck from the rubbing of the chin rest should strive, if necessary, for a complete change of position (Eberhardt's chin rest in the middle of the instrument).

In inflammations of the skin at the point of contact between neck and instrument, Flesch recommends the transfer of this contact toward the right, the left, above or below—or, if necessary, the shifting of the flesh of the neck to a sort of double-chin formation. Every case involves the avoidance of new irritations of the sore parts.

With actual redness, swellings and abscessing one should not generally play, if only for reasons of infection danger—or at least he should have at hand an alcohol bandage. Finally, from the common inflammations of the under-skin connective tissue there develops either a small boil (pus affection of the hair follicles), or the well-known pigmented calluses. Abscesses must be operated upon.

The peculiar carriage of the head during violin-playing, which indeed no longer corresponds to the normal head carriage, can in predisposed persons lead

to a slanting position with a one-sided shortening of the neck musculature (torticollis). Pains and convulsive twitches habitually occur with such—to be sure infrequent—disorders, and moreover such carriage anomalies are not exactly advantageous in social existence. Hence a medical intervention may become necessary. All possible procedures, indeed, have been advanced—from massaging and electrizing to the cutting-through of the musculature, or even to a surgical operation on the nerve roots issuing from the neck portion of the vertebral column. If such a severe and tragic case befalls the violinist, he is hardly then of any further use in his profession. Here the worst can be averted by the recognition and observation, as well as by the early elimination of an extreme oblique and inclined position of the head. Just such individuals are eligible to study a fundamentally different method of violin position—and withal of violin-playing. In such circumstances, the Eberhardt method strikes me as cure-promising.

While superficial callus formations are, as a rule, quite painless and therefore require no treatment, there are nevertheless some cases in which any pressure upon the callus is described as extraordinarily painful, and where the pain even spreads over the surrounding territory. I have seen two such cases. In one it was definitely, and in the other possibly, a question of a neurofibroma; that is, a small tumor-like hardening within the peripheral skin nerves. Such small inflations are in fact excessively painful. Their proof is possible microscopically, either through a test excision or else through finding similar, and likewise painful small nerve knots

in other nerves, especially in the course of the greater nerve stems. Their treatment exists in surgical removal.

Moist, hot fingers are very disturbing to violinists and pianists as well as to wind players and harpists. Hyperhydrosis (excessive perspiration secretion) is sometimes an indication of the overexcitability of the vascular and glandular nerve activity. It is found in average neurasthenics and psychopaths especially during periods of excitement or after long practicing. At other times moist hands may be a symptom of an apparent or hidden tuberculosis; however, at other times they are a symptom of a merely physical exhaustion.

Besides a general treatment, a special treatment of the hands is not to be avoided. The internal effect of atropin is the reduction of glandular activity; however, after several weeks of treatment, dryness in the throat occurs, and pupil-changes and accommodation disorders of the eyes are also observed. As local treatment, hot baths are usually recommended, immediately followed by the painting of the skin between the fingers and of the hollow of the hand with ten percent chromic acid or undiluted formalin, all lasting from two to three days; in addition to these, powdering morning and night with five percent salicyl talc or ten percent tannoform talc is helpful. I have occasionally seen beneficial results from other kinds of powder, such as lenirenin. If these combined internal and external methods are not successful in removing hand perspiration, then irradiation with röntgen rays should be attempted under very expert supervision. The use of steel strings should be recommended for perspiring hands.

The pains of which wind players occasionally complain in the tongue, in the throat or in the region of the tongue bone can almost always be attributed to an incorrect method of playing, and only seldom to overexertion.

It has not yet been established that professional hardness of hearing in a musician has been caused through noises or even through the most intensive exertions of a modern orchestra. Since locomotive whistles do not yet belong among the usual orchestral instruments, this theoretically possible attack can never really lead to practical professional disorders in musicians.

Non-musicians, more frequently than musicians, are affected with a motor neurosis of the middle ear, in which disagreeable noises develop in the form of whistling, ringing, clanging and buzzing. They are usually the local indications of a general nervous constitution. It must frankly be admitted that these very brain symptoms are not only the most difficult to treat in a general neurosis, but are also the most lasting—indeed, in spite of the elimination of an organic disorder, sometimes incurable. But the significance of this for a musician need not even be mentioned. Here again, early recognition is a better cure through temporary treatment of the entire person, with the exclusion of his professional activity, than later experimentation. As sedatives one can recommend the influence of electricity and the bromin preparations, such as bromin, sedobrol, bromural, adalin.

Prophylaxis, in specific wind players' diseases, accomplishes more for the sufferer of lung emphysema

than later treatment of the completely developed suffering. One should see—and that is again the concern of pedagogues—that the lungs are not overdistended in blowing. Moreover, it is important to blow the instrument with the tongue instead of with the full breath from the lungs, to have a good sitting posture in order to obtain free diaphragm breathing and to avoid any pressure on the thorax or abdomen from clothing. If the suffering is pronounced and if clinical changes of the bronchi are not present, then a sojourn of some months in high altitudes can be helpful. St. Moritz is especially praised. Similarly beneficial can be the continued and regular oxygen inhalations and, if need be, a cure of the breathing by inspissated or diluted air. This cure can be taken in the so-called pneumatic chambers such as exist, for example, in Wiesbaden, Reichenhall, Ems, Kissingen, Gmunden and other places.

In the case of a rigid thorax, breathing exercises with active physical movements are beneficial; special exercises have been given for costal and abdominal breathing, compression of the chest or of the abdomen during exhalation, movements of the trunk and the arms for the strengthening of difficult exhalation, and the invigoration of expiration through special oppositions (for example, glottis-closing). Favorable changes in circulation and the draining of blood from the lung vessels are produced through forced breathing pauses, as, for instance, the arrest of the exhalation current. The greatest caution and control, especially in sufferers from heart disease and arteriosclerosis, are necessary with

these exercises, as well as with the manifoldly applied Zander [1] exercises, or with the methodic breathing exercises on Rossbach's breathing chair. This care is all the more necessary since emphysema almost never appears before the fifth decade of life.

The prospects for cure are small in a fully developed disease. A change of climate generally brings subjective and temporary improvement. One should be urgently admonished against the courageous measure of rib extirpation in order to offer better expansion possibilities to the lungs. I have recently seen several cases of the complete cure, through systematic breathing gymnastics (Professor Koetsier), of asthma and incipient lung emphysema.

Almost every other occasional complaint of musicians —whether it be of the motor apparatus, pharynx, palate, tongue, lips or in the forms of pain, cramps or convulsive jerks—can be attributed to temporary exertion, or as arisen psychogenically upon a nervous basis. Treatment must follow according to the previously specified directions.

4. Treatment of Vocal Diseases

In the chapter on vocal disorders of singers, we already have, through disclosing their causes, offered numerous suggestions for their treatment. There are really only two large groups of singing disorders which must be treated; one is the vocal weakness through the lack of schooling or through poor singing method, and the

[1] *Translator's Note:* Jonas G. Zander (1835–1920), a Swedish physician whose exercises consist of passive movements by means of special apparatus.

other is vocal weakness due to nervous reasons. For the avoidance of the first group, those disorders produced by poor methods, the pedagogues are responsible and, for the second group, the general treatment of the nervous apparatus is necessary. The treatment of all these irregularities begins during instruction or even at school. It should really end there too; for with the elimination of the indications considered injurious, the change manifested in the voice must gradually be removed. It is, in fact, within the teacher's power, by prohibiting the quantitative abuse of the developing singer's voice as well as by preventing its qualitative abuse, to employ only a correct, physiologically constructed and hygienic method of instruction, to avoid exceeding the vocal compass set by nature, to correct wrong breathing and to avoid the faulty use of the resonance cavities or of the registers.

The period of practicing will have to be determined quite individually; but it must be definitely stated that, during the years of practicing, five to ten minute pauses should be regularly inserted after fifteen-minute periods of singing and that, with the first signs of fatigue, the singer must rest without further ado.

Breathing exercises can very well prevent the named misuses of the voice. The most suitable method of breathing for the professional singer is that of the least frequent respirations with great volume of air—that is, deep mouth breathing (Katzenstein and Gutzmann). The exercises in the so-called *mezza voce,* as well as those in crescendo tones, are important, and a well-developing technique can be proved by singing in piano,

also by the crossing of registers—that is, the transition of one into another—by *voix mixte* and by the control of intermediate registers. The forced use of the chest register is poor. It should therefore always be borne upon singers, speakers, lecturers and preachers, that in singing and speaking a complete rest of a once-strained vocal organ is the essential provision for later sound functioning.

With distinct diseased alterations in the vocal reed, interventions may be unavoidable. These must be undertaken with the earlier named precautions, and even then not in one sitting (for example, in the removal of the palatine or pharyngeal tonsils), but in several sittings, in order to be able to observe, during the intervals, whether the voice character or the voice color has been impaired.

Upon the appearance of disorders it is necessary to correct our understanding of the vocal mechanism as well as of the anatomical conditions, which are indeed visible to us through the mirrored reflection. If no changes are found, and if the disturbance continues, even after a prolonged rest, then an improvement may directly set in through a change of the teaching method or else through the compensation methods given by Flatau, Fröschels and others.

"Singers' knots" are surgically removed more often than they actually exist. More singers become worried and discouraged, and therefore unqualified for singing, by the diagnosis of these distressing accessories on the vocal cords than by their concealment. With psychopaths, a deception—namely, the communication that

nothing diseased has been found—would probably have a better effect than the best operation. In conclusion, they are not dangerous, even if also not quite a simple matter.

General treatment and the trial of the most powerful suggestive influence are required for the removal of those common disorders which have developed upon the basis of general nervous inferiority. The older the affected person is, and the longer the suffering has existed, the worse is the prognosis of vocal disorders conditioned through overexertion, wrong methods of instruction and nervous causes; it becomes quite bad after the fortieth year and after a duration of three years.

In the named disorders of a nervous nature, such as functional hoarseness, glottis cramp, hysterical voicelessness, it rests in the judgment as well as in the practical experience and in the suggestive power of the doctor whether he undertakes only a treatment of the general condition, or whether he combines this with local treatment. It is often good just out of suggestive significance, if, for example, every treatment of a vocal disorder begins with breathing exercises. Frequently hypnosis, faradization or even the feeling of suffocation induced by the extremely quick introduction of a small ball in the larynx (according to Muck), shortens the treatment of a hysterical ailment. A similar effect is also obtained through the obstruction treatment of the larynx given by Flatau, in which suctional disks are placed on both sides of the thyroid cartilage.

In dealing with professional voice weakness, the so-

called phonasthenia, general treatment is likewise to be made the *Leitmotiv* of our medical actions. The laryngoscopic images inform us first of all that the longitudinal tensor muscles show muscular weakness. The means for preventing phonasthenia (according to Gerber) are: Avoidance of any overexertion, abolition of incorrect methods, of unfit instruction, of poor breathing, of the extended use of squeezed tones, of the overtaxation of the larynx by deficient co-help from the resonance organs. Moreover singing or speaking should be discouraged during indispositions, during convalescence, and in women during their periods.

The treatment of phonasthenia, when it is a vocal weakness produced by quantitative misuse of the voice, exists in rest and general invigoration; and when it is caused by qualitative misuse of the voice, it consists in correct practicing. Imhofer in his well-known monograph has given detailed information in reference to the proper time when medically treated phonasthenia sufferers should resume singing, and Flatau has discussed at length the prognosis of this most common disease among singers.

Without mistrusting the published results of laryngologists with phonasthenics, one may indeed say that the only liberal treatment lies in early recognition of the ailment and consequently in the forced removal of the faults and in the control of the breathing and singing method. This prophylaxis, this caution in preventing the spread of this menacing disease, must go along with a general treatment. At this juncture problems of destiny are indeed presented for discussion—the im-

portant problems of a career, of further study and of the collapse of artistic endeavor. Every word must be uttered and every smallest action must be performed at the complete responsibility of the pedagogue and the physician.

I have a tolerably large personal experience in regard to the treatment of phonasthenia. In the cases which I have seen and observed, the persons concerned were all nervously weak and in the course of the disease were even psychically changed. Upon this, all therapy hinges. In a favorable case, phonasthenia, developed upon the basis of a nervous constitution because of poor, incorrect singing method, may indeed sometimes be cured through psychotherapy, through calming, through comfort, through encouragement, through cheer, through invigorating, blood-building and tonic means and procedures and also through water and massage cures, especially when the necessary rest and forbearance are dictated and observed. But in the absence of these mental components a phonasthenic person is seldom completely restored to health through local treatment alone. I am convinced that part of the numerous stated methods of local treatment is also only suggestive in character.

If the laryngoscope finds diseased places which, according to medical experience, can affect the degree and the duration of the disorder, then the method to be chosen is the treatment of these nose, throat and larynx affections. If phonasthenia still persists, then vocal gymnastics should immediately be commenced. These have been presented in such great detail in well-known text

books on phonetics, and have been acclaimed by all practitioners as such an excellent means in the therapy of vocal weakness, that they appear to be the most suitable method to force the disease to a halt, and then to a retreat. Nevertheless, the incurability of chronic cases must be reckoned in the ratio of 2 out of 3. Then the remaining compensation methods should be attempted.

For the prevention of diseases in the class of "colds" we must now refer to certain statements in Chapter VI. In general it can be said that the general hardening of the body and the special inurement of the air passages promise success to singers in their intense struggle against colds and dangers of infection. Here again the rule applies that no hoarseness caused by a cold should be taken lightly, since it can conceal the most dangerous as well as the most harmless trouble. The inflamed vocal cords of a singer who wishes to remain active in professional life, must not be even for a second superfluously agitated and burdened.

Chronically inflamed organs must be locally treated, and when accompanied by excessive changes must be removed. To be sure, the question of intervention should never be decided by the subjective feelings of a diseased person—which may be wholly deceptive—but only by the opinion of the experienced nose and throat physician. And lastly, as first, a singer should never neglect this reminder: That in his striving for a beautiful and always properly functioning voice, he should always be conscientious in promoting the special hygiene of his body, his mind and his work.

APPENDIX

THE HEALING EFFECT OF MUSIC—THE HYGIENE OF PLAYING

Athletics, Sleep, Water, Air and Sunshine for the Musician

We are nearing the end. One quietly shudders when regarding the vast multitude of disease symptoms which can attack the professional musician. That person who understands the world, schooling and music, who knows how to read between the lines of this book—that person will again breathe freely. The recognition of dangers already signifies the elimination of half of them. Instinct and the feeling of physical ability are the counselors of the ignorant; the informed add to the unconscious feeling of security in attainment, the consciousness of danger possibilities. Them the foregoing chapters teach. These chapters also indicate the preventive measures and the general hygiene that mark the path to a healthy compromise between "wanting" and "being able" and between the energy-output and the constitution.

We should not be conscious of our bodies during work. For this result, professional occupation with music and the study of its technique have already provided by the joining of the mechanical with the spiritual, and of the outer with the inner expression of emotion. Any pedagogue of the profession and any student,

occupied by the dissension between physical mechanics and mental soaring, who are aware of the significance of the foregoing sentence, should not be forced into artistic decline. There is little danger that dullness, deficient responsibility and lack of talent go hand in hand with an obsession and a vain yearning for sheer virtuosity, and that the neglect and undervalution of biological, psychological and constitutional principles may transform a healthy student into a sick one through musical activity. The path of music is a different one, an entirely opposite one. In music, are implanted the seeds of health, not of disease, for all who regard music as the highest emotional experience. Music shelters within itself the moods, the emotions, the strengthening and refreshment which we need in hours of despair, suffering and resignation. The soul is urged toward music to seek liberation from the daily yoke; we strive toward it, we conquer even the most formidable obstacles, if an inner voice impels us to become its active servitor. The "healing effects of music" have been mentioned.[1] The pursuit of music steels the will, the spirit, the energy, the muscles, the sinews, the memory; it trains the vessels and the internal organs; it levels the exchange between tension and relaxation; it chastises the body, it regulates breathing. Through hours of pleasure, it acts as a mirror which receives the picture of our real-world misery and throws back the changed, reflected image of an unreal, dreamed-of, ideal world of mystical, primitive experience. Music is a healer, a savior. It is a

[1] I have devoted a study to this problem, published by Julius Püttmann in Stuttgart.

divinity, and godless are they who hostilely reject and oppose this art.

And yet—disorders in the profession, through the profession and through study? Yes and no. The contents of our book testify to the affirmative, and the negative glimmers through. Indeed, there are infinitely many more disorders in the lives of originally diseased musicians that become evident precisely in professional life—diseases which are revealed and not produced through their work—than disorders precisely caused by the profession itself. This applies above all to nervous and mental defects as we have described them; it applies also to the dissensions, indispositions, hindrances and derailments as they are produced through anatomically poor provisions, through physiological ignorance and through faulty activity in unsuitable, discordant work opposed to the organism. Pedagogy is now instituted, as well as hygiene.

In a detailed study (published by Vieweg) Heinrich Davidsohn has stated the essentials of the hygiene of musical practice. He stresses with justice that the early recognition of beginning fatigue is the first requirement of the hygiene of playing. Through fatigue, the quality of work is lowered and it is often immediately perceived in the slackening of artistic achievement. Pauses and rest should also be arranged systematically in the plan of practice.

The learning of technique signifies the retention of brain-stimulating impressions; their associations with each other in carefully planned images stimulate practicing, which again is connected with fresh brain work,

attention and concentration. Through practicing, the plan of movements becomes automatic and unconscious, the associated movements of neighboring organs cease, technique and movement-memory are developed and the taxed nerves and muscles are trained. The consciousness of physical work is lost; there remain only hearing perception and the concentration upon the purely artistic and spiritual phases of the art-work. The final effect of technique is that it is a servitor to an aim rather than an aim in itself; that, from the many possibilities presented, it draws out the essential, the most convenient and the best, and that furthermore in its perfection it does not attack the physical assets of strength but increases them.

Technique grows slowly, not forcibly, and its automatization demands time and patience. Only gradually at first does the necessary harmony between brain, nerves and muscular activity grow, and only by degrees do we first learn to balance between surplus and deficiency of movement in artistic service.

Pauses must take place before fatigue forces them; endurance and the necessity of rest cannot be taught so well by even the best experiments and laws as by the experience of one's own body. This experience should be trusted by all, and should be followed unswervingly.

During these rest pauses, it is good to make the muscles and joints as lax and unstrained as possible. This relaxation, this "looseness," as modern gymnastics teach, is an excellent expedient for renewed efficiency and is likewise a good means toward preventing fatigue.

In addition, the pendulum movements, which passively arise in moving the body to and fro, should be performed without muscular tension, as well as the movements of the joints that another person, usually the instructor, carries out upon the relaxed limbs. Also without special methods, one learns the benefit of the relaxation movement which, by bending forward from the hips and dropping the high-raised arms, effects the slack swinging of the arms. Such exercises are also beneficial during the interruption of a few minutes in playing. Similar services are also performed for the forearm and the hand by rolling and by shaking. Tension and relaxation are thereby healthfully balanced and rationally displaced by one another.

In this way, the playing ability in all its degrees and qualities—bowing, touch and tone-production technique—is increased, the efficiency and endurance develop, the joy in practicing and the disposition for playing are intensified, and gradually the practicing over and over of a composition becomes superfluous. The properly practicing person is always fresh, always prepared for playing, always in form and always "disposed."

Through conscious directing of brain functioning upon physical and muscular work, many nervous disorders also are ended, removed and made impossible. For this purpose, it is also quite unnecessary that a musician, in order to preserve his health, should become an athletic "fiend." An athletic, muscular constitution is not suitable for the artist, and he need not yearn for it. To him, the training of muscles is necessary only for

the polish and smoothness of the most delicate mechanical work. Outdoor exercises and indoor gymnastics are better than strenuous rowing, Zander's exercises or the Mensendieck [1] system of functional exercises. And with many it is actually sufficient and even successful to unburden the mental strain through the physical nature of music study. Creative persons engage in mountain-climbing and in farming in order to retain healthy nerves and mentality through such muscular sport. Others realize the best recuperation in violin-playing, others in conducting (Mahler) and yet others in somersaulting (Wagner).

For heroines and women singers of Wagner, a systematic athletic cure would hardly be beneficial; not so seldom, their strength lies in their stoutness and dwindles with the success of intense yearnings for slenderness. And many a modern composer would be cast into the same discord, if athletics, ever since youth, had deprived him of the trembling, the vibration, the excitement and the nervousness of his writing and thinking style. (Refer to Weissmann, "Sport und Musik," *Vossische Zeitung, Nr.* 89, *Jahrgang* 1926.)

For one person athletics, a universally praised remedy, builds up life-strength and an artistic world, and for another it crumbles them. Rhythmic physical gymnastics—for a long time this was the "trumpet call" of youth. And the result? The enthusiastic devotion to jazz, that barbaric king of rhythm—which signifies the death of all romance, and the victory of physical action

[1] *Translator's note:* Bess M. Mensendieck, whose exercises are very well-known in America and Europe.

and sport at the cost of emotional art. This may be exaggerated, this may be temporary.

Nevertheless, athletics is not the sovereign means in healing the artist for his profession. As a factor for invigoration and hardening, it may be praised, but not as a mode for the musician. One must already be well informed in a person's characterology before one can advise him "to set up on its legs" the balking work-machine through the systematic exercises of arm-throwing, body-bending and head-standing. Even without that, the free time of an earnestly studying musician is not any too great. And in general, no greater importance should be given to athletic enjoyment, than to beneficial walking, rest after meals and the reduction of the use of nicotine and alcohol.

But in addition it would often be advisable, just from the pedagogical angle, to turn from the one-sided and also tiring tax of music study to mentally stimulating, scientific and literary lectures. The common intellectual ignorance of musicians entering public life is amazing. It is first objectionable when it concerns musical matters. The occupation of the intellect relieves the body. By reading the experiences of great pedagogues from their works and by becoming acquainted with musical knowledge, experience, work and endeavors, as presented by good biographies and interpreters, an individual spares his strength for mechanical work, facilitates the completion of manual technique and subordinates the external musical movements to the laws of understanding of intellectual-artistic ideas. Only in this manner can he become a characteristic interpreter,

only thus can he acquire and feel any pleasure in the ability to set art in the place of mechanics.

It is not always foreseen how the path by way of the physiological and psychological, of music theory and history, can facilitate, intensify and sanctify the expression, technical qualities and mental penetration of the work presented. The study of biographies, of stylistic examinations, of psychological experiments and of historical works is as helpful to an inwardly animated technique as is the reading of scores, as the execution of musical exercises, as attempts at creative work and as attending concerts.

The development of artistic creation also depends upon a higher intellectual development in order finally to reduce *ad absurdum* Hegel's notorious comment on the stupidity of musicians. But how many musicians are acquainted, outside of their special professional branch of knowledge, with the existing works of literature? How many sopranos are interested in choral works without soprano solos, how many violinists in wind instruments and in the middle voices of scores, how many pianists in string literature, and how many music students in the esthetics and psychology of music? This also belongs to the hygiene of practice, of studying and of artistic endeavor. Music is Art. But to every one who aspires to emerge from the mechanics of his special branch of knowledge, it should become an intellectual and cultural interest and not merely a casual one.

For such an accomplishment, which would in reality elevate musical production, there is only one essential necessary; namely, time. Unfortunately, the orchestra

and opera musicians have less time than persons in any other profession. Rehearsals take place in the mornings and afternoons, and concerts and performances in the evenings and at night. There are many tyrannical conductors who cruelly overestimate, or utilize to the extreme, the amount of endurance given to every one. It not infrequently happens in large cities that an orchestra rehearses with one conductor from nine to eleven in the morning and from eleven to one with another, that then the mid-day pause does not suffice to offer real rest and real relaxation to the body and brain, that it rehearses again in the afternoon and that it gives a public performance in the evening. This is exhausting, and even out of economic considerations and obligations, inexcusable. What have such musicians outside of their professional existence? How will they preserve their powers of experience and joy in playing, when they languish from such forced labor? Such a lack of consideration must be resisted by the unanimous will of the ensemble. Sitting eight hours daily in an office or standing before a machine is a different matter from being subjected from eight to ten hours a day to another's will and sacrificing during every minute the entire personal responsibility for an animated performance of artistic quality.

For the musician even Sunday is not a free day, not a holiday. The most stringent demand of hygiene—indeed, a requisite for the possibility of development of a true musician—must be the day of leisure, of recuperation. This also is due to the person who only provides for the edification of his fellow men, precisely as it is

due to the latter. So also with regard to the regularity of nourishment, of physical care and of daily rest.

Hygiene in practice, mental diversion and physical training without succumbing to the epidemic of athletics—these are strong enough factors to render their follower secure, in general, from professional disease. What average demands should be granted for a healthy study of technique and what convenient measures often result in benefiting the nervous, tired person, have already been stated.

Let us now return in detail to a discussion of the fundamental means of recovery, since it is the great reserve power for strained bodies, overworked nerves and restless minds—Sleep. It is the capital on which the working ego draws interest; it is the great blessing of peace, of "not knowing," of calm and of oblivion. One who loves work must love sleep as the soundest preparation for work; and one who knows the joy of strengthened awakening can judge the value of peaceful sleep. What is there in this Sleep which has been named as the Brother of Death?

To probe into the theoretical essence of sleep, it is really to be comprehended as a special, definite type of unconsciousness. Since even consciousness cannot be localized in the brain but is dependent, for its soundness, upon the healthy general constitution of the entire cerebral cortex, therefore it could not occur to any one to localize, perhaps in a definite section of the brain, the negative consciousness, the abolition or the reduction of consciousness which characterizes sleep.

In recent years, to be sure, in pursuance of grippe

epidemics, clinical examinations have been made which no longer face so skeptically such a dangerous and unscientific-appearing problem. Whether the process in the brain is physical or chemical, we have nevertheless succeeded in assigning certain mental properties, certain, so to say, qualities of the ego, to definite parts of the brain, which themselves must change with the production of a mental change.

So-called sleeping sickness has directed the attention upon nuclei in the brain, whose diseased affection causes sleeping sickness. The diseased persons, whose brain nuclei are affected by an inflamed change, begin to decline in a death-like sleep from which they can be aroused only temporarily and through external stimulants. There can be no hasty conclusion that the actual center of sleep is in fact laid in these accumulations of ganglion cells (so-called nuclei). Because of this, nothing positive is yet stated in regard to the nature of sleep and the provisions for its setting-in.

There are many theories in regard to this. According to one, sleep is distinguished by a special type of blood shortage in the brain and the resulting undernourishment of the essential brain sections necessary for consciousness. This would be an occurrence similar to what we acutely experience in fainting. Consciousness is not wholly eliminated even in sleep, as indeed the active dream-life of people proves. Besides, the mild termination of the state of unconsciousness and the comfortable, regular awakening make this theory appear speculative. Recent examinations speak even more for a continuous blood overflow in the brain during sleep.

The chemical theory also has many followers. According to this theory, decomposition matter and fatigue substances, conditioned by muscular work, nutrition and the assimilation of sensory irritation, are continuously being circulated in the blood. These substances, these decay products of albumin, act as poison substances. Therefore, it is assumed that this albumin poisoning (as in other poisonings with chemical substances) produces sleep.

Quite unlikely is the doctrine that anatomical alterations of the cerebral cortex would be responsible for sleep. This doctrine would establish, by means of dead animals, that certain processes of the ganglion cells are withdrawn in sleep in order to be expanded again at awakening. All these theories only prove how far distant we still are from solving the problem. The furthest steps have been made in the understanding of localization; and one may already definitely assert that in any case, the tegmentum of the mid-brain and the so-called bridge of the brain must be connected with the essence, the profundity and the setting-in of sleep.

Sleep is diseased in the previously mentioned brain disorder, as well as in other infections or accidentally caused changes of the brain. Therefore the manner of sleeping belongs to the typical symptoms of brain concussion, and the duration of this troubled consciousness, as well as the depth of the disorder, are significant for the prediction of the benignancy or the malignancy.

The necessity for sleep is subjectively marked by a general feeling of enervation and fatigue, mental as well as physical. Muscular tension slackens in the ex-

tremities as well as in the face; keeping the eyes open becomes difficult; the facial features give a relaxed and tired impression; and the possibility of concentration and attention, as also of perception and memory, is reduced. Also the yawning reflex, which is likewise anatomically transferred in the mid-brain, indicates the desire for sleep. The result of sleep is a refreshed feeling and increased tension.

These positive characteristics are not subjectively and objectively revealed equally in all persons. The healthy person is again qualified for new achievements, and also the diseased, especially the nervous person, but not in the same measure. The latter, even from artificially produced sleep, has no greater feeling of general refreshment.

Not all persons require the same amount of sleep. An adult who systematically performs intellectual or artistic work and is not interrupted by sudden overdemands on his efficiency, can progress with seven hours of sleep. Children and nervous persons need more sleep; healthy adults after becoming accustomed to it can do with six or less hours, and old people require less sleep than ever. Periods in which special transformations occur in the human organism—particularly in the years of development—require, on the other hand, longer duration of sleep.

Superficial sleep, affected by dreams, is usually less invigorating and less refreshing than deep, calm sleep. The most beneficial time for sleep is not directly after eating, but perhaps about two or three hours later. Alcohol can hasten and intensify fatigue, and excesses in the

use of nicotine or coffee may substantially delay falling asleep. People, who sleep lightly and are therefore awakened by the slightest noises, frequently have no correct conception of the duration of their sleep, and state that they have not slept at all, have been awake all night, etc.

The regular hours of sleep are frequently not preserved, especially in the hurried life of large cities and in exhausting professions such as that of music. The organism of every person can easily become habituated to a definite ration of sleep, even a small one, but not to a constant change in the hours of sleep and rest. Thus it happens that temporary increases of work-burdening—for example, before examinations or public concerts—diminish the otherwise normal inclination for falling asleep, make the sleep restless and prevent the feeling of being refreshed after sleep. At such times even the natural necessity for resting is opposed by the use of artificial means, partly through diversion and distraction and partly through excessive drinking of coffee and alcohol.

Only a well-rested body can function properly. Moreover, the mental activities suffer if disorders disturb sleep. According to examinations of Weygandt, it has been demonstrated that persons whose sleep was artificially interrupted or postponed for several hours clearly displayed memory weakness on the following day. He calculates the reduction of brain efficiency through the deprivation of sleep at about fifty percent and a similar disorder in the associative thinking capacity, while a continuous deprivation of nutrition for two

or three days does not cause a disorder of the mental functions.

In contrast, it has been experimentally proved that sleep acts in the sense of a training and recuperation and that it effects the disappearance of a previous exhaustion. For simple mental activity, in an experiment by Weygandt, even three hours of sleep were sufficient and for difficult mental functioning only a whole night's rest was curative and effective.

Frightful, dreadful and threatening dreams make sleep unpeaceful and leaden. Persons with fantastic dream experiences frequently speak of being tormented by a nightmare; we know that such individuals awake just at the moment of great terror or of vivid fear and then with difficulty again fall asleep. The interpretation of such dream experiences, which are often connected with future plans or daily events and more frequently with the general characterological tendencies of the person, has been elevated, through the epochal work of Freud and his pupils, to a high scientific *niveau,* and the analyzation of these dreams can again bring peaceful sleep to many persons, healthy or diseased.

In dealing with disorders of sleep, no significant development in the sick person's life should be omitted from medical consideration. It is equally important to know how the temperature of the bedroom is controlled, how all outer acoustical and optical irritants are excluded, how the day is spent between work and rest, what difficulties and cares oppress the sleeper, which recollections plague him, what type of life he

leads, what part is played in his life by stimulants, such as tobacco, tea, coffee and alcohol, and how he arranges his diversions, distractions, visiting, entertainment, dancing, concerts and theater in the general structure of his life.

Normal sleep can sometimes be obtained by changes in the person's position and by alterations in making up the bed and in the sleeping location. With nervous people, the systematic execution of a time plan is often the principal rule for producing sleep. One must now be guided on the one side by the necessities within the professional life, and on the other side by the demands on the constitution.

Usually disordered sleep is only one of the many symptoms of nervous persons. Since one cannot deprive a person of the basis of existence, the elimination of the true cause of the evil is not often successful. Many musicians, especially those who play far into the night, would be immediately relieved in their sleeping, if they could be released from the necessity of playing. Economically and socially, as well as psychically, this is impossible. Therefore one must resort to substitutes. In the very first place are the opiates, which now, indeed, are unfortunately being delivered even without medical prescriptions.

Expert treatment must be given to excessively nervous persons, to innately tainted persons, to fear neurotics, psychopaths, hysterics and neurasthenics. In the common mild forms of poor sleeping, simple methods are often sufficient. These, of course, should not be confined merely to procedures when going to bed. I mean

above all sufficient nutrition corresponding to the consumption of energy, and, if need be, with the aid of strengthening nutritive substances; regular exercising (walking or athletics) in the fresh air before retiring to bed; rub-downs with room-temperature water or French brandy; hot foot-baths; lukewarm chest wrappings; avoidance of stimulating; animatingly interesting lectures before the night rest; and the avoidance of poison-containing foodstuffs. Athletic activity during the day, a short—perhaps half-hour—reclining after the heavy meal of the day, and regularity of work and recuperation are valuable aids to the improvement of sleeping. Only when these educational, rather than medical, methods of hygiene have already been attempted, should one consult doctors with systematic cures, electrical, suggestive and medicinal in nature.

The use of baths—that is, of water—for healing purposes is, on the whole, as old as scientific medicine. Even in Greek antiquity rubbings with water of various temperature were employed for dietetic purposes, as also for the prevention of infections and for the individual treatment of disease. From Hippocrates up to most recent times probably no notable physician could be found who would not recommend baths and water as a curative means and as a hygienic measure for the invigoration of the body. In contrast to all other means of medicinal, serological and physical methods of cure, the theory of water treatment (hydrotherapy) preserves its rank even with researchers and physicians who do not swear by the sole salvation effect of the bath.

In this matter also, as in everything, a biased view

destroys sound and honest observation. The distribution of the latest methods of water-activity, such as bathing, swimming, showers and rub-downs, should be considered only for specially constituted people, and not as a general rule for physical care. The ancient doctors' mistrust of vegetals and drugs is already expressed in the famous maxim, ἀριστόν τό ὕδωρ (water is the best).

Winternitz, the founder of hydrotherapy and its most important scientific defender, mentions that Asclepiades was even nicknamed "Psychrolutes" (cold water bather) because he used water for medical treatment. The Emperor Augustus and the poet Horace were successfully cured by Antonius Musa with water.

In the middle ages, when the most essential cure values were attributed to the discussion of diseases under church influence, hydrotherapy lost its esteem. In the seventeenth and the beginning of the eighteenth centuries, the utilization of water, especially in feverish diseases, began to rise in value under the stimulus of the Italian school and was systematically completed as a science by Wright and Curry in England. These Englishmen were followed by the Hahn brothers in Germany. The great popular favor of these new methods and simultaneously the poor constitution of their scientific fundamentals were demonstrated by the challenge of Hufeland, who offered a great sum as a prize for the best work upon the effect of cold water.

The prejudice against methods essentially propagated by laymen still continued for decades. It was a layman, Priessnitz, who finally effected the furthest promotion of the knowledge and methods of water treatment. This

lay treatment led, several decades ago, to the then famous Father Kneipp's [1] cure, which again gradually lost favor. The theory then gained substantial enrichment through the medical fraternity, which, in pursuance of Priessnitz, examined the influence of water upon feverish temperatures. Even in recent times the water treatment, if not actually displaced, has nevertheless been forced back in moderate measure, in contrast to chemical preparations.

The contact of water with the human body produces first of all thermal stimulation and effects a compromise between the body temperature and the water temperature. The greater the difference, the more immediate and energetic is the result. Cold or hot temperature can cause, purely physically, either increased or decreased heat of the skin surface. In these circulatory changes the brain also participates. Thereby there are produced a calming effect and reduction of the nervous irritability. But, not only is the skin thermically and physically affected; the change of the vascular caliber also extends as reflexed upon the internal organs, as we also have, through systematic water treatment, the means of influencing the circulatory capacity of even deeper vessels. Vascular contractions and expansions are the direct results, as can readily be proved by means of the sphygmograph.

First of all, the stimulation of cold produces, in the affected region, vascular contraction, which is later followed by vascular expansion. With the sufficient dura-

[1] *Translator's note:* Father Kneipp (1821–1897) whose water-cure was highly regarded in its day.

tion of cold influence, the nutritive conditions must also change, since, indeed, a change in vascular width also signifies a change in the influx of blood and along with that, tissue and vascular tension.

Therefore through cold and heat one can alter, in a certain sense, the entire organism, in regard to its blood circulation and nutrition. For this purpose, cold and hot temperatures, and also occasionally the combination, that is the interchange of both factors, are necessary. We can produce a local shortage of blood, a congestion of blood in the surrounding parts, and a change of pressure and of tension in the vascular system, as well as an altered blood-flow. With sufficiently long action, we can change the temperature of the body as far as the marrow of the bones. We also have the ability to regulate heat; we are able to divert the blood influx from an organ overfilled with blood, as for example in inflammations. For instance, we employ this means with headaches, which are caused by blood congestion in the brain. Ice applications or hot foot-baths are frequently curative in this manner. Likewise, inflammations and suppurations can be reduced by lukewarm baths. For this purpose it, indeed, involves even the mechanical washing-away of infectious parts and pus corpuscles. Various examinations of an experimental nature have shown that even the irritation symptoms of the peripheral nerves, especially the sensitive fibers, are decreased under the influence of water. There is no doubt that, through the route of vascular changes, the respiration also changes, and, further, that because of the exchange of gases (absorption of oxygen and release of carbonic

acid) the good health of an individual is subjectively elevated.

According to the fundamental works of Strasser, it is certain that water treatment increases the general assimilation of the body in the sense of a normal activity of the living cells. The excellent soothing action of a bath upon an irritated nervous system is best proved in the psychiatric clinics where excited, mentally diseased persons can often be calmed only by constant bathing. The great influence upon the body of baths, also in the form of medicinal baths (oxygen, carbonic acid, etc.) can be demonstrated by the multiplication of certain blood corpuscles during the bath and by their diminution in the subsequent reaction (or the reverse).

These scientific examinations and observations upon particular kinds of baths have yielded fairly equal results. There are hardly any special water procedures; we often attain the same results with different methods, and it is but a matter of personal experience, whether one would prefer a bath or a sitzbath, sectional packs or full packs. The most widely known procedures are baths for the whole body, warm baths with cold douching, hip-baths, hot baths with gradually lowered temperatures, cold douching, plunges and showers. In addition to these, there are the rubbings and the cold damp wrappings of individual parts of the body or of the entire body. Home measures include cold head compresses, swaddling of the chest during diseases of the respiratory apparatus and moist calf bandages. For pacification and for promoting sleep the favored procedures are warm baths and packs—which are also more pleasant subjec-

tively—cool packs or compresses during acutely painful head reactions, as well as the so-called ice-bags for calming the heart-action.

This is not the place to recommend special water measures for individual diseases. For the healthy musician, who by the sweat of his brow earns his bread or pays homage to his art—as for any other healthy person—there are excellent hygienic restorative means in cool rubbings with water or French brandy and in room-temperature rubbings of the whole body in the evening. Ordinary nervous excitability is obliterated by a lukewarm bath, and nervous sleeplessness by a prolonged bath. It is rather a matter of personal experimentation whether pine-needles, Stassfurter salt or similar substances are added to the pure water bath.

Great caution should be exercised in regard to persons more than fifty years of age, whose vascular hardening has already been advanced, and also in heart-diseased persons. In such instances every shock caused by a too high or too low temperature is harmful. Furthermore the addition of oxygen or carbonic acid to the bath should be rejected, since it raises blood-pressure in older people. These measures are finally decided by the physician. In these days of systematic athletics and methodical physical culture, it is superfluous to point out how refreshing and beneficial a bath is before and after musical activity.

In the *Deutscher Musiker-Zeitung* of July 17, 1926, there are a few theories on the sun-bath, reprinted from the Sick Fund Reports. I regard these notices as important enough to cite them here verbatim:

Care and hardening of the skin are excellent means of preserving the health. The skin is not only an important heat regulator of the body, protecting the organism from the havoc of changing temperature, but it is also a powerful excretion organ, which in association with the kidneys and the lungs provides for the ejection of poisonous substances from the body.

Beach bathing (water, air and sun bathing) is the most efficient means for hardening the skin. It stimulates the function of the skin, promotes assimilation and blood-building and makes people joyful and serene.

One should never indulge in beach bathing under a temperature of 18 degrees centigrade. Plenty of movement (walking, exercises, etc.) is necessary to prevent feeling cold. Shivering is resisted by strong rubbing of the skin and by energetic movements. In prolonged chilliness outdoor bathing should be immediately discontinued.

The most effective beach bath is the sun-bath. Sunshine with its chemically active rays, exerts powerful stimulation upon the skin. Since, with excessively long and violent exposure, this stimulation can result in severe skin inflammations, and, among sensitive or sick people, can even lead to dangerous diseases of the body, special precautions are essential in administering the sun-bath.

During the sun-bath, the head should be raised and shaded; the eyes, if possible, should be protected from strong light.

To prevent sunburn, no individual part of the body should ever, at the beginning, be exposed to the direct

action of the sun for more than five minutes at a time. Therefore, the position of the body must be altered every five minutes; one begins with the back, changes to the right side, then to the left side, and finally to the abdomen. The sun-bath is to be followed by a short water bath, whereupon the body is dried.

Those parts of the body which have become sensitive from the sun-bath should be immediately protected by some covering and withdrawn from further action of the sun rays.

The entire duration of the sun-bath, when first attempted, should be limited to fifteen minutes. This caution is indispensable, since the effect of the sun-bath on the skin can never be judged beforehand, and very serious consequences (intense pains, severe inflammations, etc.) are revealed only several hours after the exposure, frequently not until the following day. If the baths are comfortably endured, then they may later be gradually extended to one hour.

If the sun-bath results in severe redness, sensitivity or inflammation of the skin, then the skin should be smeared with good vaseline or pure fat, and for the time being further indulgence in sun bathing should be absolutely abandoned.

One should never bathe on a full stomach, nor on one that is completely empty. The use of alcohol before and during the sun-bath should be strictly avoided, as it is dangerous to life.

With diseases actually existing, the sun-bath may lead to severe disorders and to sudden dangerous attacks. A person who does not feel entirely well should therefore

take no sun-baths without a previous medical examination.

With the problems of the hygiene of practice, work, rest, mentality and body, as well as with the excursions into the spheres of dreams and sleep, we have already outlined the preventive measures which promise success to our efforts against professional disturbances. If however, there then occurs a severe disorder—perhaps on the basis of a poorly acquired inclination—the passing from a general to a special treatment is necessitated.

The diseased person by himself will have to follow the thinking and teaching course of his helper; he will strengthen, with all feasible devotion to words and directions, his will for health, and autosuggestively he will work further on these same instructions and regulations. His collaboration, which is just as indispensable as his obedience, stands and falls with the authority and the understanding of the knowing, sympathizing and discerning physician. His confidence is already a step toward improvement, for only the trustful person unresistingly takes advice for rest or suspension of activity, for a change of *milieu,* or for time-robbing procedures of a mechanical nature. One should not forget that cures for nervous people, especially for musicians, are tests of patience of the most extreme kind.

There is a substitute to be offered. When it is impossible to avoid the elimination of professional work, when an ambitious person must be deprived of his instrument for months, then one requires strong counsels, diversions, life-pegs, given from individual understanding. In large cities, such diversions will consist of con-

certs, theaters and the opera; in smaller cities, efforts in other intellectual activities, preponderantly in the nature of musical theory.

This is also the opportune time for participation in some prevailing sport. The professionally diseased person has, indeed, only the choice between boredom and physical work outside of his profession.

Beneficial results are also realized through interruptions of uniform activity, by way of air-baths, ablutions, packs, sleep, walking and temporary deviation into other fields of music; the diseased flutist can, indeed, peacefully play the violin and the professionally diseased pianist can play the flute. Individuality is submerged, novelty is worshiped and change is sovereign.

One thing remains fixed as a marching route—this clear perception: We do not treat the symptom, but the personality. We are not concerned with poor or bad playing, but with a career and a destiny. In the last analysis, even as doctors, we act under the pressure of responsibility to art and artistic life. A physician who wants to understand the professional distress of a musician and to help him, must be an artist. *Hic Rhodus, hic salta.*

Outside of separate publications, the monographic works of the following authors have been used: Barth, Bernhardt, Imhofer, Poiret, Gerber, Flatau, Thausing, Cassirer, Kretschmer, Fröschels, Gutzmann, Dornblüth, Lewandowsky, Oppenheim, Gruhle, Singer, *Handbook of Physical Therapy,* Toby Cohn, Zabludowsky and Schuster.

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