

time or means or energy to bring to bear all the resources which our art now affords, especially if he is already too much imbued with the idea of the inevitability of the status of his patient.

I recollect one instance of an inmate who had been four years regarded as a hopeless dement, and for whom an early death was anticipated because of his emaciation through refusal of food, mutism, and because he did not control his dejection. And yet, a twenty minute interview showed that this man was merely a profoundly timorous psychasthenic who had completely lost heart, overburdened by the psychological puzzles he had been endeavoring to solve before his incarceration. Placed in another institution, he returned to normal life after four months' careful bodily and mental nursing.

This is not to imply that two neurones can be grown where only one grew before. It is merely to emphasize the need of alertness to distinguish between psychogenetic and neurogenetic, which the former can so well simulate. To those who were not convinced before, the great war provided innumerable instances. But even now some neurologists ignore the prevalence of the psychogenetic and seek always a materies morbi. To do this is to drive many patients away from our profession into the hands of those charlatans who are not blind to the role of the psyche.<sup>16</sup>

#### CONCLUSIONS

This is only an imperfect sketch of a vast subject, for it is not possible in a short address to compass so large a field. The members of this Section will have supplied many examples in their own practice, where clinical knowledge of the nervous system might have received earlier application. The subject has been chosen by me, however, in order that each of us might stimulate and spread among his colleagues the need of that close co-operation with us, without which serious errors in diagnosis and treatment will continue to be made. Such errors discredit our profession and drive the public to seek the services of charlatans, who are thus enabled to masquerade under different banners as physicians; and indeed to receive even the recognition of courts and legislatures, against which recognition, in the public interest more than in our own, we are compelled to wage war. But our success in this struggle is de-

pendent upon the *degree of service which we do mankind*. This, I have tried to lay before you, is seriously jeopardized by the present lack of co-operation of the medical profession in general with those who have made a special study of the complex intricacies of the nervous system, not only in the sphere of the reaction of the whole organism with other organisms which shows itself as behavior, but also in the sphere of reactions which so often simulate bodily disease and deceive the unsophisticated into believing in a disturbance of local origin when it is of the nervous system alone.

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#### OUR PROBLEMS\*

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Unfortunately we have no adequate term to designate our specialty. The roentgenologist is one who deals with the science of the x-ray. The radiologist utilizes radiant energy, particularly radium.

Roentgenographer and radiographer have come into use as dignified terms for technicians. The greatest problem for the new worker in roentgenology today

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is the study of the range of normal phenomena in a given individual.

The greatest problem in radiology is the study of the comparative susceptibility of normal and pathologic tissue to radiant energy. The comprehensive use of the x-ray is not truly a specialty. Its intelligent use necessitates, step by step, coordination of other diagnostic and therapeutic factors.

A familiarity with the stages of various pathologies and varying intensities capable of photographic effect or screen visualization presumes a knowledge of both the pathology and histology surrounding the field of examination and is limitless in its scope and application.

There is unquestionably a toll of disability and mortality from attempts to correct morphological changes and exaggerated functions that are largely compensatory. Tissue that is intended by Nature for repair may be destroyed by the surgeon, due to our misinterpretation.

A wide range of familiarity with compensatory phenomena necessitates an intensive study of the whole field of medicine. Normal habitus and its variations mistaken for pathology has furnished a yearly toll of error. Departure from the classical is common. Conformity to the supposedly classical is frequently a curiosity.

#### OUR LIMITATION

Our limits are measured by our individual capacity for the application of knowledge. Without a familiarity with the common endocrinopathies we may be lost in the examination of bone changes or other anomalies. The significance of adenopathies referred to us for diagnosis and treatment depends on our ability to determine their origin.

The significance of calcium and its distribution may be vital in prognosis in the thyroid gland or lungs. The distribution of gas in muscle tissue (gas bacillus infection), emphysematous and pneumo-visceral phenomena whether bacterial, traumatic or spontaneous make possible the determination of the disease factor. The significance of exudates and transudates with their territory of invasion offers limitless originality in technic for their detection.

#### SPECIALIZATION

Much discussion may be indulged in as to the merits of the surgeon directing the technic of the x-ray examination, and if the problems are orthopedic and the referring physician competent, the roentgenologist has little to commend him over the mechanical technician. If it were possible to be equally proficient in the use of the x-ray and the knife, it were better that the surgeon manipulate the filled appendix with his own finger in the fluoroscopic room; in other words, make his own diagnosis. But the various stages of x-ray technic would require too much time and prevent intensive effort on the part of the surgeon in his own field of work.

That radiologist who feels that his work with the x-ray unaided suffices for a diagnosis is standing in his own light and places him on a par with the physician who can dispense with the x-ray except for an occasional x-ray film.

The radiologist should be peculiarly fitted to advise methods of correction in injuries. He has the means at hand to locate many of the focal infections and sees the end results from metastatic infections. His constant contact with the best minds in the various specialties should fit him as the ideal consultant.

He may see more kidneys with their chart records, function tests and clinical appearance than the genito-urinary specialist. He may see more sinuses and mastoids than the head specialist; more stomachs, hearts, thyroids and lungs than the internists; more cancers and fractures than the surgeon. His opportunity thus becomes the greatest for clinical observation and study of any branch of medicine. Without an intimate contact with the pathologist, therefore, his usefulness may be little more than that of the technician. His judgment may often be pitted against a number of men at one time.

For instance, his report is frequently disputed as to the location of the foreign body, when obstructive emphysema of the lung is the chief phenomena. Both the experience and the training of the radiologist should be such that he may stand graciously firm in his report when it is

warranted, yet be humbly conservative in the great number of conditions in which the x-ray has shown a percentage of error.

Hence, how we may promote co-operative efficiency becomes our really great problem.

#### THE TECHNICIAN

The technician is our best friend and our constant associate. He is the artist who gives us the topography of the fields we are to invade, but unfortunately he is the potential element in the development of the "commercial laboratory." There is nothing in the medical practice act of many of the state laws to prevent the use of the x-ray by any one who so desires. Any cult or "ism" may diagnose and give medical advice under the guise of a commercial x-ray laboratory. The osteopath and chiropractic finds the x-ray machine the most valuable adjunct in widening his field of approach to medicine.

No state is safe from such encroachment unless its medical practice act provides that the making of a diagnosis constitutes the practice of medicine. Minnesota, Louisiana and Florida are among the few whose laws seem adequate at present.

The constitution of our parent body, the Southern Medical Association, forbids our collective effort at medical legislation, but I feel that a familiarity with conditions may forewarn us individually as medical men, and I will refer you to the September issue of the *California State Medical Journal*, Vol. xix, No. 9, dealing with the technician problem in that State.

#### EDUCATIONAL CO-OPERATION

The organization of an independent State Radiological Society has served a valuable educational purpose in some localities. In our State one day is set aside for a joint program with one of the other sections during the annual State meeting. In metropolitan centers it is possible for the chairman of the Radiological Section to provide visitors who may present advanced problems in radiology.

#### NEW PROBLEMS

To the physicists our debt is ever increasing. Three new devices that give large promise have made their appearance since our last meeting. The introduction of a device that in the physical laboratory has given us a measurement not only of the quantity of the various x-ray wave lengths, but has determined for us the energy expended in secondary radiations in the tissue and shown us why much of our calculation of dosage has heretofore been at fault.

The work of Kroenig, Friedrich, Des-sauer and Wintz in the development and application of the iontometer (which is the calibration of electrostatic units observed in the divergence of the leaves of a gold leaf electroscope when properly insulated and connected to an ionization chamber within a body cavity) has added much to the accuracy of deep treatment. The high voltage transformer and the new type of Coolidge tube promises an accuracy in dosage and potency in the destruction to deep tissue for which we have long sought.

The danger is correspondingly increased. It is unfortunate that disaster must come to a number of patients before laws will be enacted to limit the use of radium and the x-ray.

The advent of the new technic requires exceeding skill and the results warrant a degree of enthusiasm. Some of the large clinics have discontinued surgery in cancer of the cervix, and but few breast cancers are selected for surgery.

I may here report two deaths from the use of pneumo-peritoneum by competent men, air embolus being ascribed as the cause. I have but recently seen a case of sterilization and permanent skin change produced in a young woman from the injudicious use of the fluoroscope by an over-enthusiastic surgeon. The penetration of short length rays, after passage through a thick copper or zinc filter, has produced death in the patient from deep tissue change without evidence of skin change.

With the higher voltages and heavy filters, death is apt to be produced if the dose is sufficiently large to produce evi-

dence of skin change. Shall we follow our German collaborators in an attempt to produce a cancericide or lethal cancer dose at one treatment, or shall we repeat our application at intervals over the period of probable cell division in the growth?

Dr. Holdhoffer emphasizes the susceptibility of the spinal cord and suprarenal bodies in post-roentgen nausea and covers this area with opaque material during treatment. Dr. Orndorf advises that if all body coverings are removed from the patient nausea is lessened. The cause and relief of post-roentgen nausea is a problem of deep concern.

The production of deep muscle induration with possible abscess is one of the latent effects produced by the writer in a patient who had a negligible skin reaction. The telangiectases of former years were less to be dreaded. Thus latent tissue effect becomes a problem with a new aspect.

The pathological laboratory and dead house become more and more places of interest to us. Judgment in the selection of tonsil cases for treatment adds a new problem to our field, cystic changes being a probable contraindication.

How we may utter a word of caution against the miscellaneous use of opaque salts for pyelogram, the pneumoventriculogram, pneumoperitoneum, etc., without offense is a problem of extreme delicacy.

It is with a feeling of regret that time will not permit an elaborate discussion of the few problems that have here been so lightly touched upon. Let us each in his small way be a means to help this great body of earnest men constituting the Southern Medical Association, and let our infant Section be known as a place where the allied workers may find a welcome and a wholesome grain of truth.

I wish to thank the officers who have contributed most of the work toward what seems to promise a successful meeting and the Council and officers of the parent body who have provided the facilities for presenting our branch of science.

## THE ROENTGENOLOGIC DIAGNOSIS OF GASTRIC CANCER\*

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The contribution of the roentgen ray to the diagnosis of gastric cancer makes a chapter of which the roentgenologic profession may well be proud. It is not exaggeration to say that 95 per cent of cancers give roentgenologic evidence of their presence. Often their early recognition can be thus revealed when they can not be discovered by other methods of examination. They can be differentiated with reasonable accuracy from various other lesions within and without the stomach; their site and extent can be shown and considerable information as to their operability can be obtained.

Pride in these achievements, however, should make roentgenologists only more ready to acknowledge the limitations of the roentgen examination. The roentgen ray does not compete with the microscope in making histologic diagnoses. It can only disclose the presence of a tumor, an ulcer, or a lesion of uncertain character. By experience it has been learned that nearly all neoplasms of the stomach are cancers and that ulcerous lesions of certain types are most often cancerous. To this extent, therefore, the roentgen diagnosis of gastric cancer is empirical. Further, by showing the location and extent of the cancer the roentgen ray is of valuable assistance in determining whether operation is feasible. This, of course, it can not accomplish alone with absolute finality.

### PATHOLOGY

Most pathologists recognize three principal gross types of gastric cancers: the medullary, the scirrhous, and the mucoid or colloid. Medullary cancer is characterized by large, soft, lobulated or cauliflower-like masses projecting from the mucosa into the gastric lumen, but there is no tendency to general diminution of

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