of January we have not had a case. If the work is kept up and the Marine-Hospital Service is properly supported the plague will be stamped out from the Pacific coast. The departments are doing excellent work, and if we can unify them it seems to me we shall take a step in advance which will some time lead to what the most radical want.

DR. H. B. HEMENWAY, Evanston, Ill.: We have an excellent medical and surgical administration in the United States Army and Navy, and we have also a Public Health and Marine-Hospital Service. In this country there is not enough authority given to the medical man. We all know that the medical army officer has not the authority which he should have and which some countries, Japan, for instance, give to the medical officer. At the time of our war with Spain, after the surgeons made requisition after requisition for quinin the quinin was not forwarded until the need for it was past, and when finally a chaplain went up to a certain brigadier-general and asked if he could not use his influence to hasten on that quinin, the brigadier-general ordered the chaplain under arrest. The trouble was that there was no authority. I am second to no man in my admiration for the work which has been accomplished by the Public Health and Marine-Hospital Service, but this service, as it exists to-day, is coupled with the management of hospitals which have been in existence a long time for a specific and very limited use. The government has been using that old service, throwing on it a certain limited sanitary work. For efficiency the public health service should not be dependent on marine hospital management. Vital statistics ought to be under the control of the Bureau of Public Health, not the Bureau of Commerce and Labor.

CLINICAL AND MEDICOLEGAL SIGNIFICANCE OF SLIGHT TRAUMA TO JOINTS.

SIDNEY LANGE, M.D.

Radiographer to the Cincinnati Hospital.
CINCINNATI.

The Roentgen era has added much to our knowledge of joint pathology and has made possible a broader classification and a more comprehensive therapy of joint disease.

In the production of joint disease trauma undoubtedly plays a most important rôle. The trauma may result in a gross lesion of the joint, it may be the determining factor in the localization and growth in the joint structures of micro-organisms already present in the blood or lymph stream, or the trauma may initiate degenerative or chronic inflammatory changes in the synovial elements, changes which may in time impair or destroy the integrity of the joint. It is to this latter class of cases that attention is directed.

The histologic elements making up a joint are of comparatively low organization and scant vascularity. Degenerative and chronic inflammatory changes of a fibroid or calcareous nature are, therefore, very prone to occur in the joint tissues. Such changes are not infrequently initiated by some trauma to the joint, often so slight that it may have been overlooked by the patient.

Furthermore, the close relation of the bone-forming elements to the synovial sac makes new bone formation about the joint not an uncommon occurrence. Such new bone formation is usually the accompaniment of chronic inflammation in the joint, an inflammation which is so often excited by some slight trauma. A fall or strain may have ruptured a ligament, bruised or torn the periosteum or torn loose a small piece of cartilage or a splinter of bone. Chronic inflammation with fibrous tissue and new bone formation follows.

Such changes about a joint differ from similar changes in other parts of the body in that the joint

changes are so often progressive. A fibrous or calcareous change in its incipency may or may not interfere with the function of the joint, but the mere presence of such changes in or about the joint constitutes a hindrance to the free movements of the joint and an irritant, and the process which gave rise to this irritant becomes progressive. Thus what was originally a conservative effort on the part of Nature becomes, in the synovial regions, an irritant, and each new conservative effort gives rise to more irritation. A real vicious circle results. Too often this vicious circle accomplishes the permanent functional ruin of the joint. This is especially true in large joints, such as the knee, in which the movements are violent and the strain considerable.

These chronic joint changes are usually slow in developing; from one to ten years may elapse between their inception and the production of marked functional joint impairment. The causal trauma is thus often overlooked or forgotten.

The Roentgen picture of these joint changes is often of the greatest value and the only means of arriving at the true nature of the condition. The joint examined immediately after the slight injury may show nothing abnormal on the skiagram; or there may be evidence of some effusion into the joint or there may be seen a detached splinter of bone usually at the insertion of a ligament. Again, there may be a cracking off of the articular margin of the bone or a distinct gross fracture may be present. Such injuries are usually treated by rest and fixation of the joint for a few days to several weeks, and recovery may be apparently perfect. Indeed, in the slighter cases the patient may not seek medical attention at this time. After a variable period of time, impairment of the strength and function of the joint may gradually develop, with or without pain. The Roentgen picture is now often characteristic. Minute or gross changes in the joint may be evident. There may be slight irregularities in the contours of the articular margins. Bony spicules may be seen here and there. Joint contours, instead of being smooth and nicely rounded, may be uneven and of grotesque shape. Bony spurs and outgrowths are seen in the more advanced cases. Loose bodies may be present in the synovial sac. Ossified masses (tendinitis ossificans) may be seen developing in the ligaments, especially near their attachment to the bone, or there may be a bony outgrowth into the ligament of its point of attachment. Bony masses may be seen in the surrounding muscles (myositis ossificans), which masses play an important part in interfering with joint movements. If the original injury has been a gross fracture there may be noted an excessive callus formation around the fracture with irregular outgrowths from the callus.

The changes being progressive, the ultimate picture may be not unlike that of arthritis deformans. True arthritis deformans may be ruled out, however, if the other joints of the body on examination are found normal.

Constitutional tendencies play an important part in the production of joint changes. Fibroid and calcareous changes about joints originating from trauma are much accelerated and aggravated by an accompanying constitutional state favoring their development. Given a patient of distinct gouty or "arthritic" (if the term be permissible) habit, the chances for chronic joint changes following trauma are much increased. This tendency is more or less marked in all arteriosclerotic individuals past 40 years of age.

The significance, then, of slight trauma to joints is its bearing on prognosis. The possibility of such joint changes following trauma must always be borne in mind and a guarded prognosis must be made in many joint injuries, especially those occurring in individuals past 40 years of age and of arteriosclerotic or gouty habit.

From a medicolegal standpoint these chronic joint changes are of much interest. Not infrequently claims for damages or accident insurance are made on the basis of joint changes, developing months or years after the original injury to the joint. Since such joint changes may undoubtedly be initiated by a slight traumatism to the joint, it would seem that such patients have just claim for damages, although in any given case it may be difficult to prove that the original trauma stood in direct causal relation to the subsequent joint trouble.

I have recently seen two such cases, one a hypertrophic arthritis of the wrist resulting supposedly from a fall on the hand two years previously, and the other an elbow which could not be completely extended because of a bony mass between the head of the radius and the articular surface of the humerus, resulting supposedly from a slight trauma some time previous. Both patients were in litigation to recover damages for the injury, but both lost in court.

There is another type of joint trouble which follows slight trauma, in which conditions are reversed. In this type of case the joint changes precede the trauma, but the symptoms are latent until called into being by the trauma.

It has been frequently observed that the changes of true arthritis deformans may be present in one or more joints without giving rise to any symptoms in these joints. The symptoms may, however, be lighted up at any time by some trauma to the joint. In the routine examinations at the Cincinnati Hospital this observation has been repeatedly verified. In the examination of joints of patients referred to the Roentgen laboratory for a supposedly acute traumatic synovitis due to falls many of these joints show all the changes of an advanced arthritis deformans, and yet such a patient will give no history of trouble with the joint previous to the injury. This observation has been made most frequently on the knee joint. An x-ray examination of the uninjured (supposedly normal) knee will show practically the same changes, although the joint functions perfect and painlessly. When the symptoms are once lighted up in these joints by the trauma they rarely disappear completely but run the characteristic course of arthritis deformans, namely, with remissions and exacerbations. The possibility of an underlying arthritis deformans should always be borne in mind when a traumatic joint inflammation refuses to subside under the usual treatment.

The following case illustrates the medicolegal phase of this circumstance:

Patient.—Mr. K. (referred for x-ray examination by Dr. Maloney), aged about 55, suffered a severe strain to his left knee in a railroad accident. The immediate symptoms were so slight that the patient continued on his feet and at his occupation of railroad conductor. In about ten days he took to his bed and was confined there several weeks, apparently because of delayed shock. When he got up again he complained of some weakness in the left knee and some pain. This pain and weakness was especially marked when the knee was fatigued and the symptoms became progressively worse during several months, after which I was asked to make an x-ray examination.

Examination.—At the time of examination the knee was slightly swollen and slightly tender over the internal aspect,

but complete flexion and extension were not painful or restricted. The x-ray examination revealed no fracture or other gross injury to the joint, but the characteristic changes of arthritis deformans were present; bony irregularities, spicules, lipping of articular edges and loose bodies were seen. The uninjured (supposedly normal) knee was then skiagraphed and the same changes were noted.

Here then was a case of well-advanced arthritis deformans but symptomless up to the time of the trauma. The patient made a claim for accident insurance, which was allowed and undoubtedly justly. For, although the chronic joint changes preceded the injury, the injury lighted up the symptoms which now refused to subside. In the absence of such an injury it is reasonable to suppose that the patient would have continued to enjoy the full use of his knee for years perhaps. For the uninjured knee was evidence to this possibility. Hence the patient had a just claim for damages or insurance, although the pre-existence of the chronic joint changes should have modified somewhat the amount of the claim.

22 West Seventh Street.

THE REGISTRATION OF VITAL STATISTICS.*

CRESSY L. WILBUR, M.D.

Chief Statistician, Bureau of the Census,
WASHINGTON, D. C.

I feel that I may reasonably take for granted the validity of the principle that complete and trustworthy vital statistics are the very foundation of sanitary work and absolutely indispensable in the daily duties of officers of the public health.

The means of obtaining such statistics were laid down in the "essential requirements" formulated some years ago by the American Public Health Association and the Bureau of the Census, and only last month reaffirmed, as "statistical rules," by the American Public Health Association. These principles have formed the basis of many successful laws, and no legislation in this country that has disregarded them has been successful. They are so important that it is worth while to repeat them:

ESSENTIAL REQUIREMENTS FOR REGISTRATION OF DEATHS.

1. Deaths must be recorded immediately after their occurrence.
2. Certificates of death of standard form should be used.
3. Burial or removal permits are essential to the enforcement of the law.
4. Efficient local registrars are necessary.
5. The responsibility for reporting deaths to the local registrar should be placed on the undertaker or other person having charge of the disposition of the body.
6. The central registration office should have full control of the local machinery, and its rules should have the effect of law.
7. The transmission and preservation of returns should be provided for.
8. Penalties should be provided and enforced.

ESSENTIAL REQUIREMENTS FOR REGISTRATION OF BIRTHS.

1. Births must be recorded immediately after their occurrence.
2. Certificates of birth of standard form should be required.
3. Some check is necessary to secure enforcement of the law.
4. Efficient local registrars are necessary.
5. The responsibility for reporting births to the local registrar should be placed upon the attending physician or midwife, and upon the parents if no physician or midwife was in attendance.

* Paper read before the Conference of State and Provincial Boards of Health of North America, Washington, Sept. 25, 1908.