

ical condition of each person noted; also the relationship which the physical condition bore, if any, to his economic efficiency.

Six hundred sixty-eight individuals, or 66.8% of our cases, were in good or fair health; 342 individuals, or 34.2%—one out of every three persons—were in poor or bad health, and in such physical condition as to warrant urgent medical treatment.

About 626, or 62.6%, were considered self-supporting; while 374, or 37.4%, were not self-supporting.

Some correlation between these figures is evident.

Thirty-five per cent. of those found to be in good or fair physical condition had been steadily employed; while only 2% of those found to be in poor or bad physical condition had been steadily employed.

Eighty-five per cent. of those found to be in good or fair physical condition had been, and still were self-supporting; while only 18% of those found to be in poor or bad physical condition had been and were still self-supporting. The chances for being self-supporting were more than four to one in favor of the individual in good physical condition.

Additional facts are included bearing upon the frequency of venereal disease among a group of 600 consecutive cases studied.

Forty-seven per cent. of these individuals were suffering from one or both of these diseases; an additional 4.5% had doubtful bloods and smears.

Of these 600 cases, 303 were so-called offenders against chastity; of these, 57.4% were suffering from syphilis or gonorrhea, or both; while an additional 4.9% were doubtful cases.

There were 134 cases of drunkenness; 38.8% of these individuals had venereal disease; an additional 6.5% were doubtful cases.

There were 112 cases of larceny. Of these individuals, 33.9%, or one out of every three cases, had syphilis or gonorrhea, or both.

There were 17 individuals arrested for possession of drugs; 53% of these had venereal disease.

Other types of offenders in court showed a correspondingly high frequency of these conditions.

In short, the conclusion reached from this study is that venereal disease is not limited to any one type of offender in court, but is found common among all classes of delinquents, and

that a policy calling for a more routine investigation of the physical condition and the possibilities of each offender, prior to his disposition, would seem justifiable.

IDENTIFICATION OF SOLDIERS AFTER DEATH BY HEAD MEASUREMENTS.

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I DESIRE to give some reasons why, in measuring soldiers for fitness to enter military service, the maximum length and maximum width of the head should be taken, along with the measurements of height, girths of chest and weight, and with other data required in the physical examination of soldiers.

After the war, and probably during the war, Americans will desire to know, if not insist on knowing, all that is possible about their lost, missing and buried ones in Europe. Many will ask questions something like these: "Does the grave, marked by the provisional cross in the military cemetery, really contain the body of our son, brother, or father?" "Is the body of the prisoner who died in the enemy's hands, one of our family?" These and similar inquiries are sure to arise among American citizens, who constitute a nation which is extremely humanitarian, and a people who have shown themselves most generous in their war dealings. The necessity of identification in order to receive insurance money from the Government and from private companies, in difficult, doubtful and exceptional conditions, is apparent to every one. When it is a question of receiving five or ten thousand dollars insurance, sentiments against exhuming bodies, breaking open sealed caskets and the like will soon disappear. Not only this, but doubtless various fraudulent schemes will be attempted in the identification of the dead in order to obtain money.

If the French are asked to help in identification they will doubtless do all they can, and they are scientifically most expert in identification methods.

MAXIMUM LENGTH AND MAXIMUM WIDTH OF HEAD.

After soldiers are buried singly or in groups, and often in great haste, many of the usual means of identification may be lost, missing, or

mixed with those of other soldiers, and, owing to the many vicissitudes of war, such methods of identification may be of little or no avail.

If, however, the maximum length and maximum width of the head of a soldier have been recorded, these two measurements will be available for purposes of identification of the dead, and this, with collateral evidence of the condition of the teeth as recorded by the dentist at home, and with the additional evidence as to age of the skeleton, as indicated by degrees of ossification, will greatly facilitate and increase the probability of identification, where otherwise it might be very difficult, if not impossible to accomplish.

COLLATERAL EVIDENCE WITH THE HEAD MEASUREMENTS.

Teeth. Dentists usually keep a record of their daily work for each individual as to teeth filled, nature of filling, class, size, form, position and regularity of teeth treated; degree of decay, much or superficial, broken or with roots only existing, teeth missing. Such and other details familiar to dentists, combined with the two head measurements, would be very valuable either as positive or negative evidence of identity.

Synostosis. This is one of the first signs of age in the skeleton; the spot where it first appears varies with age. The most frequent place is at a point on the sagittal suture at the union of its posterior fifth with its anterior three-fifths, where the suture is clearly marked *obélion*. If the suture is entire, the individual is about 35 years of age or less. If the posterior sagittal point is commencing to close in, the individual is about 40 years of age. The ossification of the coronal suture close to bregma would indicate a person 50 or more years of age. If the temporal suture is closed, it indicates an age of 66 years or more. In the white race ossification generally proceeds from behind forwards; in the negro race it is the reverse. Wearing away of teeth and character of jaw can give idea of age.

CONDITION OF SKELETON IN GENERAL AS INDICATION OF AGE: OSSIFICATION OF LONG BONES.

A few of many points might be mentioned: (a) at the age of 16, the calcaneum is ossified throughout; (b) at 17, the greater trochanter is united to the head of the femur; (c) at 18, the superior extremity of the femur is united in its

entirety to the shaft; (d) at 19, the epiphyses of the metatarsal bones are united to the body; (e) at 20, the epiphyses of the metacarpal bones are united to the body; (f) at 45, the xiphoid cartilage is ankylosed to the sternum; (g) at 50, the coccyx is ankylosed to the sacrum. These and other general statements, based upon many authorities, would help much, as collateral evidence, with the head measurements.

Data taken from the regular physical examination of the soldiers, including marks, scars, osseous and other peculiarities, might be of additional service in the identification after death, according to the condition of the body, or degree of decomposition, etc.

HEAD MEASUREMENTS OF THE LIVING COMPARED WITH THOSE OF THE DEAD.

In a study of 1139 skulls of persons of different nationalities, and who at death were in various conditions of nutrition, Czekanowski, a Polish writer, gives the various thickness of the soft parts of the skull at the place of maximum width and maximum length. Taking an average of these, I find 5.1 millimeters thickness of the soft parts of the maximum length and 6.9 millimeters for those of the maximum width. In comparing, therefore, the measurements of the skull, where the soft parts are decayed away, with the measurements of the head of the living person to whom the skull is supposed to belong, 5 millimeters should be added to the maximum length and 7 millimeters (avoiding fractions) to the maximum width of the skull.

In addition to this, the cephalic index of the living subject can be compared with that of his skull after death, by adding two units to the cephalic index of the skull, as is done by Topinard and other leading authorities.

Thus, if it be claimed that a decomposed body is that of a dead or missing soldier, whose head we know to have been dolichocephalic, whether the skull of the body in question is dolichocephalic or not can easily be determined, and if not dolichocephalic, it is quite evident that a mistake has been made, if not fraud committed. If, however, the skull be dolichocephalic, the degree of dolichocephaly can be found and its correspondence with the head of the previously living subject determined. This, with the collateral evidence from data as to teeth and ossification signs of age of the skull and rest of the skeleton, will greatly aid in the identification of heads of the living with their skulls

after death, and both positively and negatively. The negative evidence can prevent much fraud.

TIME REQUIRED AND EXPENSE OF TAKING THE HEAD MEASUREMENTS.

The time necessary to take the maximum length and maximum width of head is one minute. The head measurements could be taken best along with the measurements of height, chest girths, etc. If this is not done by those making the regular measurements required in the physical examination of soldiers, it could be done at other times, and with a force of ten persons, from three to four thousand could be measured in a day. The calipers for making the measurements would cost about ten dollars a pair. The salaries of the force of ten or more, if thought best to increase it, could be arranged as are the salaries of those now conducting the psychological measurements of the soldiers.

PHYSICAL STATUS OF THE AMERICAN PEOPLE.

The physical measurements of our young men which are being made in connection with their entrance into military service, is a beginning on a large scale of establishing the physical status of the American people. The measurements of maximum length and width of head, furnishing the cephalic index, are the two most important physical measurements of the body. In most all scientific studies of races and peoples, these two head measurements are taken. The physical and psychological measurements now being taken of the soldiers would not only have their scientific value greatly increased by the addition of these two head measurements, but the physical status of the American people would be made comparable with that of other peoples, races and nations.

The American people, who are paying and sacrificing for the war, are entitled to such knowledge, not only on account of the practical reasons for identification already set forth, but for its permanent and general value to the whole American nation now, and especially in the future. And unless these most important measurements are taken now, requiring but one minute of time, this opportunity of making all the measurements—mental, moral and physical—of much more present and permanent value, will practically be lost.

BIBLIOGRAPHY.

Topinard, Paul: *Anthropology*. London, 1878, 8°, 548 pp.
Ozekanowski: *Untersuchungen über des Verhältniss der Kopf-*

masse zu den Schädelmassen. Braunschweig, 1907, 4°, 58 pp. Gives results of numerous authors, as Topinard does, as to both skeleton and head.

Paul-Boncour, Georges: *Anthropologie anatomique. Crâne—face—tête sur le vivant*. Paris, 1912, 12°, 396 pp. This work gives extensive table of ethnic groups, showing cephalic indices of the living or the dead, divided into dolichocephalics (77), sub-dolichocephalics (77-79.6), meso-cephalics (79.7-81.9), sub-brachycephalics (82-85.2), brachycephalics (85.3-86.9), and hyper-brachycephalics (87 and more).

Deniker: *Races et peuples de la terre*. Paris, 190.

—: *Essai d'une classification des races humaines*.

Bulletin de la Société d'Anthropologie, t. xii, p. 320.

Schmidt, Emil: *Anthropologische Methoden*. Leipzig, 1888. 8°, 336 pp.

PATHOLOGICAL CLASSIFICATIONS OF PULMONARY TUBERCULOSIS.

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THE resulting reaction of tissues to the injury by the entrance of the tubercle bacillus, depends upon the virulence of the bacilli, the resistance of the host, the number of bacilli and the length of time of contact of the bacilli with the tissues. Furthermore, the treatment of the infected person influences the pathological condition to a great extent.

It is very uncommon to find a single stage of disease in a tuberculous person if the disease has been present for some time; for instance, it is not uncommon to find, in the same lobe of the lung, caseation, necrosis, inflammation, fibrosis and calcification.

However, it is possible to divide the disease, according to its pathology, into inflammatory and ulcerative types, and these two types may be subdivided into fibro-inflammatory or fibro-ulcerative of the incipient moderately advanced or advanced stage, as the case may be, according to the other manifestations of the disease.

The diagnosis of these conditions may be made clinically by stethoscopic examination and also by observation of the sputum and by the use of the x-ray; the inflammatory cases having, as a rule, broncho-vesicular or, possibly, bronchial breathing in some instances, depending on the site of the lesion; some cases, however, do not have any modification of the vesicular breathing, but they do show fine râles of a crepitant nature.

The ulcerative case shows at some time mucopurulent or purulent sputum, with elastic-tissue fibers, and stethoscopic examination shows signs of cavitation, at times very slight, including marked variation in the vesicular respiration, increased sound transmission and râles of a mucous character, depending on the stage of the ulceration.