

hundred and forty-six skeletons of folk who lived in the eleventh and twelfth centuries. Here as at Pecos the majority of the people died between thirty-five and fifty-five, the peak of mortality occurring at about forty years. Of the entire number only eight lived to see their sixtieth summer.

"To die of age," said Montaigne in the sixteenth century, "is a rare, singular and extraordinarie death, and so much lesse naturall than others. . . . It is an exemption, which through some particular favour Nature bestoweth on some one man, in the space of two or three ages." On attaining his thirty-ninth birthday the same philosopher wrote in soliloquy, "Thou hast already over past the ordinary tearmes of common life."

Twenty years ago Karl Pearson analyzed the curve of modern deaths obtained from English vital statistics. He found that the peak of death occurs at seventy-two years but that there are lesser peaks in childhood, in adolescence and in middle age at forty-two. All these peaks except that of old age I have found in various ancient populations of which I have mentioned merely three. Again the peak of old age death does not occur among the unfortunates who, having failed to cope successfully with the conditions of life to-day, find their last resting place in what has become the permanent morgue of our city of Cleveland, namely, the anatomical laboratory.

It is this last peak of our mortality, occurring only in quite modern days and presenting itself at seventy-two, full thirty years after the peak of middle age death, which is the most suggestive and intriguing fact emerging from our study. There have been old men in all periods of the history of mankind, but they have been rare and marked men. "And the Lord commanded Moses, concerning the Levites, saying. . . . And from the age of fifty they shall cease waiting upon the service, and shall serve no more."

Precisely when this tremendous increase in the average actual duration of life first appeared as a result of greater safety and improved social conditions, we do not yet know: it can hardly have been much more than two centuries ago. But consider the effect. When the normal age of death was the early forties a man's experience died with him and had little or no opportunity of leavening the population at large. During the last two centuries, through the warding off of the Reaper for thirty years more, the younger members of civilized communities have enjoyed all the benefits of the experience of their elders. We seek for the cause of the enormous strides in discovery and invention during the past century. May not the chief contributing factor be precisely that our fathers and uncles abide to guide us out of the stores of their accumulated wisdom? May not the rapidly increasing

sensitiveness of the civilized conscience with its resultant effect upon slavery, child labor, the rights of womanhood, be due in the main to the influence of our mothers who bloom as evening primroses in the twilight of life?

There is evidence indeed that the pace we have attained is too great for us. During the past twenty-five years we have been dying, on the whole, earlier than statistics of the expectation of life would lead us to anticipate: that is an issue for the future with its frantic haste. At the moment and for the last thought I would leave with you this evening may we not concentrate upon this theme that the major factor concerned in the betterment of living conditions to-day is the abiding with us of our elders, men and women alike? My closing emphasis rests upon the influence among us of the wisdom of our fathers and the grace of our mothers.

In Wordsworth's *Prelude* there is a phrase picturing that wonderful countryside of English lake and mountain. This phrase, so apposite for the beauty of age, is my final figure in the contemplation of these, our elders, "Clothed in the sunshine of the withering fern."

T. WINGATE TODD

WESTERN RESERVE UNIVERSITY

SCIENTIFIC EVENTS

THE LAENNEC ANNIVERSARY¹

ONE hundred years ago there died in the village of Quimper, Brittany, one whose contribution to medicine in general, and to our knowledge of tuberculosis in particular, was of great magnitude. René Theophile Hyacinthe Laennec was his name. He invented the stethoscope, wrote a masterful treatise on its use, "*Traité de L'auscultation Mediate*," organized and augmented the then current knowledge on the pathology and the symptomatology of tuberculosis and coined a descriptive terminology which is still in use for the designation of sounds elicited upon auscultation.

Withal he was a clinician of the first rank. "Perhaps the greatest that ever lived" (Krause). His studies were not confined to the lungs and to tuberculosis. The cardiac sounds, normal and pathologic, were included in the domain of his researches. He described the first and second cardiac sounds and the various types of pathologic murmurs. He understood their significance, as well as the pathology and symptomatology of pericarditis.

Laennec studied medicine in Paris under Corvisart, physician to Napoleon Bonaparte. Laennec was a

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brilliant and industrious student and quickly attracted the attention of his masters. His early studies were in pathologic anatomy. To this branch he contributed the term cirrhosis of the liver, and described the condition to this day designated as Laennec's cirrhosis.

In 1816 Laennec was appointed chief physician to Neckar Hospital. In this year Laennec made his great discovery, the stethoscope. "I happened to recollect a simple and well known fact in acoustics." That was the mainspring for the discovery of an instrument ever since the constant and most common tool of the physician. The "fact in acoustics" was simple and well known, but no one before had thought of its application to the collection and transmission of the sounds in the human machine—no one, if we except that rare and inspired genius Robert Hooke, who intellectually anticipated so many epoch-making discoveries in the numerous branches of science.

In the simplicity of the underlying principle, the discovery of the stethoscope parallels the invention of percussion, credited to Avenbrugger, the son of a wine merchant. He too remembered "a simple and well known fact in acoustics," that when one taps a wine barrel below the fluid level it sounds dull, if tapped above, it sounds hollow.

It was Corvisart, the teacher of Laennec, who by his translation of Avenbrugger's "*Invention Novum ex Percussione Morbos Detegendi*" brought percussion to the notice of the medical world, and it was Laennec, Corvisart's pupil, who invented the second instrument for thoracic examination, without which, as Otis said, "we could hardly have arrived at any degree of precision or certainty in thoracic pathology."

THE SHEDD AQUARIUM

APPROXIMATELY 131 permanent exhibition tanks, which will contain a greater variety of fish than is shown in any aquarium now in existence, will be built into the Shedd Aquarium in Grant Park, which is being constructed at a cost of three million dollars, according to an announcement made by George Morse, director, and Walter H. Chute, associate director.

These tanks will range in capacity from 375 to 13,500 gallons of water, with a total capacity of about 350,000 gallons. In addition there will be about 80 tanks in which a reserve supply of fish for replacement purposes will be kept. Approximately 900 lineal feet of glass will be used for the tanks. Two reservoirs will be built with a total capacity of 2,000,000 gallons of water, half fresh and half salt.

The New York City Aquarium, now the largest in the world, has 89 tanks with 455 lineal feet of glass and 29 reserve tanks; Philadelphia, 114 tanks, 511 lineal feet of glass and 36 reserve tanks; London, 90

tanks, 500 lineal feet of glass, and Brighton, England, 50 tanks, 750 lineal feet of glass and no reserve tanks.

The permanent exhibition tanks will be about equally divided between fresh and salt water. In addition there will be a small hatchery for exhibition purposes only and a larger hatchery for actual hatching as well as a balanced aquarium room of about 50 feet in diameter. In this room will be exhibited representatives of the small fish of the world.

Five separate systems of water are planned. One will be a natural fresh water system with 43 tanks in which will be exhibited native fishes of Illinois and surrounding states and such other fishes as are found in water of this nature.

An artificially refrigerated water system of 12 tanks will be used for showing trout, salmon and other cold-water fish. A heated fresh water system of 11 tanks will be used for tropical fresh water fish.

Two systems of salt water will be installed, one refrigerated and the other heated, the former to have 22 tanks and the latter 43 tanks. In the heated system will be shown multi-colored fishes from Florida, Hawaii and other tropical waters. The refrigerated system will be divided among native fishes of the Atlantic and Pacific coasts of the United States.

Two of the largest practical tanks are in the specifications. Each tank will be 30 feet long, 10 feet from front to rear and six feet in depth. Larger tanks are not practical because of the limitation of vision. In these tanks will be kept representatives of the giant fishes. One tank will be devoted to jewfish—a giant salt water member of the bass family—sharks and other large fish, while the other tank will hold sturgeons, catfish and muskallunge.

MATHEMATICS AT PRINCETON UNIVERSITY

EXTENSION of the department of mathematics of Princeton University, with the object of building up a tradition similar to that held by the Mathematical Institute of Göttingen, Germany, is recommended in a report just made public by the Princeton Fund. The report says Princeton has played a leading rôle in the advancement of mathematics in this country since the end of the nineteenth century and has the beginnings of what may become a brilliant mathematical tradition.

"For many years there have been frequent complaints that there is no school of applied mathematics in the United States," according to the report. No serious attempt, however, has been made to establish such a school in the proper manner, that is, by developing tendencies which have set spontaneously in this direction. There is now opportunity at Princeton to make such a development.