ASSORTATIVE MARRIAGE AND INFERTILITY

QUANTITATIVE analyses of marriage selection have established that there is a general tendency in human beings for "the attraction of certain classes of males to certain classes of females" (Pearson).[1] Correlations of physical characters studied with reference to this tendency have yielded an average value of about 0.24 (Willoughby and Pomerat[2]). Schiller[3] has summarized the literature dealing with homogamy in man, with special reference to behavior characteristics.

Materials for the present study were obtained through the kindness of Dr. A. W. Rowe, to whom the writer is deeply indebted. Records of a consecutive series of 107 infertile married couples which were thoroughly studied for diagnostic purposes at the Evans Memorial (Boston, Massachusetts) were used to study the relation between assortative mating and infertility. Since all cases desired children, presumably the contraceptive factor is not involved in this problem. The routine program in this study of sterility has been described by Rowe[4] and a preliminary discussion of the constitutional factors involved was published by Meaker.[5]

Pearson product-moment correlation coefficients of 0.63 ± 0.04 and of 0.40 ± 0.055 were obtained for the height and trunk length, respectively, in these married pairs. These are the highest values which have been thus far reported for homogamy in man. The only other stature correlation recorded to date gave a value of 0.28 ± 0.02 (Pearson and Lee),[6] derived from an English population consisting of 1,079 couples "very largely from the professional classes." It is quite possible that in the groups cited racial factors are involved. These differences as well as additional characters in the infertility group and of fertility characterized by high and low homogamy, respectively, are under investigation. The findings reported, if confirmed, are eugenically important, since they suggest a possible relation between homogamy and fertility.

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FOSSIL RESIN

IT appears that some of the conifers to-day are repeating their conservational history of ancient times. In New Zealand the copal deposits from ancient Kauri forests, and in the region of the Black Sea the amber deposits, have been interesting for centuries. Now it may be stated definitely that the balsam is doing the same thing. I cut open several gum blisters on a balsam tree that had been dead for six years and found some of them full of liquid gum while in others the resinous matter had hardened into an amber-like consistency. I think this may not be a matter of common knowledge.

CHASE S. OSBORN

REPORTS

THE ONE HUNDRED AND FIFTIETH ANNIVERSARY OF THE HARVARD MEDICAL SCHOOL

CEREMONIES to mark the one hundred and fiftieth anniversary of the founding of the Medical School of Harvard University were held on October 7. The school opened on October 7, 1783, with the induction into office of John Warren as professor of anatomy and surgery and Benjamin Waterhouse as professor of the theory and practise of physic.

On October 6 a program at the Medical School and three of its affiliated hospitals in Boston was arranged by the president and officers of the Medical Alumni Association, open to alumni of the Medical School. During the morning, the alumni inspected the Massachusetts General Hospital, the Boston City Hospital and the Peter Bent Brigham Hospital. In the afternoon they heard a series of talks at the Medical School by members of the faculty, and in the evening an anniversary dinner was held in Vanderbilt Hall.

On October 7 the formal anniversary program was held at Sanders Theater by the president of the university and the dean and faculty of the Medical School. The aim of this program was to repeat in part the exercises held at the college on this day 150 years ago.

The following description of the ceremony is taken from the official program:

> This day, one hundred and fifty years ago, two of the medical professors, viz., Dr. John Warren and Dr. Benjamin Waterhouse, were publicly inducted into office. A ceremony is held to commemorate the occasion.
>
> At about ten-thirty o'clock A. M., the medical alumni and guests with several other gentlemen of the board of overseers and corporation come to the university and, at the steps of Harvard Hall, are received by the president, medical professors and tutors. A little before eleven

[1] K. Pearson and others, "Cooperative Study of Assortative Mating in Man," *Biometrika*, 2, 373 *ff.*, 1902.

[2] R. R. Willoughby, and C. M. Pomerat, "Homogamy in the Toad," *Am. Nat.*, 66, 223, 1932.

[3] B. Schiller, "A Quantitative Analysis of Marriage Selection in a Small Group," *Jour. Soc. Psychol.*, 3, 3, 297–319, 1932.

[4] A. W. Rowe, "Some Constitutional Factors in Human Sterility," *Proc. 2d Int. Cong. Sex. Res.*, 534-544, 1930.

[5] S. R. Meaker, "Constitutional Factors in the Causation of Sterility," *Jour. Am. Med. Assn.*, 92, 1493, 1929.

[6] K. Pearson and A. Lee, "On the Laws of Inheritance in Man," *Biometrika*, 2, 373 *ff.*, 1903.

o'clock, upon the tolling of the bell, all the medical undergraduates assemble in the front of Harvard and form in two ranks in inverted order. As soon as they are formed, the president, the rest of the corporation and the professors and tutors precede the members of the board of overseers, the council of the medical alumni association, the officers of the Massachusetts Medical Society and other gentlemen present down the steps of Harvard from whence they are conducted by the undergraduates to Sanders Theater, who, at the front door, open to the right and left, and stand with their heads uncovered till the governors of the university and the other gentlemen of the procession have passed into the meeting house.

After the company has all entered the exercises begin:

1. The president (James B. Conant) calls upon the chairman of the Board of Preachers (Dean Willard L. Sperry) to open the solemnity with prayer.

2. The president delivers a short introductory oration, in which he makes mention of the medical institution and declares that in the meeting house on October 7th, 1783, with good wishes for their usefulness, Dr. John Warren had been regularly chosen and publicly declared professor of anatomy and surgery, Dr. Benjamin Waterhouse of the theory and practise of physic and Dr. Aaron Dexter of chemistry and materia medica, who had all accepted the trust, the two first of whom were present.

3. The 13th, 14th, 15th and 16th verses of the CXXXIX Psalm according to Tate and Brady's version are sung.

4. The president calls for the inaugural orations of Professors Warren and Waterhouse, which are delivered from the desk in the English language for Dr. Warren by the Herseian professor of anatomy (Dr. J. Lewis Bremer) and for Dr. Waterhouse by the Herseian professor of the theory and practise of physic (Dr. Henry A. Christian).

5. The president begs A. Lawrence Lowell, Esqre, to address the meeting.

6. The 1st, 2nd, 3rd and 4th verses of the CIII Psalm according to Tate and Brady's version are sung.

Immediately after the singing, the company is dismissed and may dine in the Faculty Club.

INAUGURAL ORATION OF JOHN WARREN

The following is an abstract, in translation of the original inaugural address, delivered by Dr. Warren on his inauguration as professor of anatomy and surgery at Harvard on October 7, 1783. It was read by Dr. J. Lewis Bremer, Hersey professor of anatomy.

At the opening of his address, Dr. Warren, like Dr. Waterhouse, stresses the many new discoveries in the field of science:

> Every one who has a real love for the liberal arts must also take the keenest interest in the study of physics, or the natural sciences, and rejoice in the advances made in these subjects in our present times. Every part of Europe is full of activity in the field of experimental chemistry, so that scarcely a wind blows from that quarter that does not carry with it tidings of new discoveries. In no lesser degree the science of botany lays claim to renown for new advances, especially for the most excellently arranged nomenclature of Linnaeus. The science of natural history also is on the verge of great developments, as evidenced both by the great collections of books on the subject and by the investigations concerning the structure of animals diligently pursued by the French philosophers; from whose industrious labors has been born a new classification, and a division of species according to structure, highly perfected, into orders and suborders. And now the science of comparative anatomy, first fostered by the Greek philosophers, Plato and Aristotle, before they ventured to explore the human fabric, has become rejuvenated through the accomplishments of such renowned scholars as Hume in England, Cuvier and Dumeril in France, Blumenbach and Camper in Germany, so that it has been built anew from its very foundations.

Stating that the natural sciences "already flourish" at Harvard, Dr. Warren describes the facilities now ready at the new Medical School:

> A new College of Medicine, upraised on no high pinnacle, but with a broad foundation under the ample wings of the university, is now made ready for the useful art of healing. A magnificent collection of instruments of natural philosophy, removed from the obscurity which they have formerly endured, now shines resplendent in the ample hall. In addition, many faithful reproductions of the human body are to be seen, which only lack a theater adequate for their proper display. If with all this we might increase her renown for a learning already great, no academy should be more worthy of praise than ours.

INAUGURAL ORATION OF BENJAMIN WATERHOUSE

The following is an abstract, in translation, of the original inaugural address, delivered by Dr. Waterhouse on his inauguration as professor of the theory and practise of physic at Harvard on October 7, 1783. It was read by Dr. Henry A. Christian, Hersey professor of the theory and practise of physic.

After addressing the governing boards of the college, and mentioning the recent disturbance of the Revolutionary War, Dr. Waterhouse continued:

> When we were oppressed by war and by its accompaniments poverty and death, when the enemy was without and the traitor was within our walls, when our bonds of union were lax and almost dissolved, when hope only was left, the fact that in the midst of such threatening evils we took occasion to cultivate the liberal arts is surely more than could have been expected and easily surpasses every example. And yet during a period of great confusion and during a time when all tranquillity and leisure were absent, colleges and various learned societies were founded in our midst. Among dire calamities there always shone somewhere in this country the hope of reestablishing the arts; and now under Harvard's auspices, a School of Medicine has put forth its head. There can be no doubt that our deeds in this age

will be remembered for a long time. Authors in future will not fail to admire the men of America who, unmoved by the swords or insults of their enemies, devoted their energies to the restoration of letters as well as to the establishment of an independent republic.

Now that the storm is over and we have acquired leisure and liberty, let us remember that a Medical School is the strongest defense against illness, that common ravager of all nations. For it is the function of the medical profession to preserve those who are in health, to strengthen those who are weak, and to restore if possible or at least prolong the lives of the dying.

The address then refers to the various subjects of medicine, described as "anatomy, chemistry, the science of herbs, and the knowledge to be gained from the whole of Nature." The address stresses the modern advances of medicine as follows:

The industry of modern days has discovered many new facts about the composition of the body. Much still is hidden and will probably remain long hidden. None the less who ever wishes to compare the ancient physician with the modern must admit the superiority of the modern, taking into consideration our present-day knowledge of anatomy, chemistry, surgery, botany and physics, remembering the new remedies that have been devised and the old ones discarded.

After discussing the existing fields of medical knowledge, the address strikes another modern note, and points to a new field—the treatment of "mental illness."

What is more human, more worthy of man and Christianity than to help the weak, the diseased and the suffering? It is to be lamented that the field of medicine which treats of mental illness and of cures for the mentally diseased is still so uncultivated and so deserted that it is almost nonexistent. The dignity of the argument commands, the progress of medicine persuades and the love of the human race should compel Harvard University to commence the investigation of means to combat such illness.

The conclusion is as follows:

Sagacious and learned president, generous members of the Corporation and Board of Overseers, I trust that nothing will be nearer to your hearts and dearer to your honor than Harvard College. From its founding, in every wise man's judgment, Harvard has been of extreme usefulness, glory and help to the whole American Republic. May the college, day by day and forever, make signal progress. To you gentlemen, fathers of your country, my friends and benefactors, has been given the privilege of advancing the medical sciences. You deserve great praise for having established a medical institution here.

College of Cambridge, permit me an adopted son to address you as mother. May you ever proceed on your way serenely and like the rising sun diffuse your light even to the extreme recesses of the Republic.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE ULTRACENTRIFUGE

THE need of the ultracentrifuge as a research tool in so many different fields of science perhaps makes a brief description of some of our experiments in this journal worth while. The method used to rotate the centrifuge is a modification of one used by Henriot and Huguenard[1] for obtaining high rotational speeds and is essentially the same as that described in detail by two of us previously.[2] However, certain important variations and improvements in design will be described, as they make for greater ease of construction and less expense.

Fig. 1a shows a cross-section of a typical arrangement. Air from a compressor is admitted to the chamber B through flexible rubber pressure tubing. Air jets from the tubes L'L impinge upon the flutings U of the rotor and start it rotating. Automatically the rotor seeks a position of stable equilibrium and rides upon a cushion of air just above the surface of the stator. The air entering through C from the atmosphere greatly improves stability and provides automatic adjustment for different air pressures, speeds and weights of rotor. The cylindrical air chamber B is mounted on a rubber washer R'R' (made of sheet rubber packing) which aids in damping vibrations. The support S is mounted on three screws used for leveling. Because of the great danger of explosion by the rotor by the centrifugal forces, the whole apparatus should always be surrounded by a barricade to insure the safety of the observer. Fig. 1b shows the important part of the stator. Although it is very important to get the holes L'L bored properly if maximum speed is to be obtained, yet there is a considerable variety of angles P and Q and sizes of holes that work successfully.[3] For example, the following dimensions are quite satisfactory: TT = 1⅛ inches, $\beta = 92.5°$, $Q = 46°$, $P = 90°$. The nine holes were bored with a No. 63 twist drill. The angle of the rotor $\alpha = 102°$.

The stator may be made of almost any metal that is easily machined, such as brass, soft steel or duralumin. Although not at all necessary, a hardened steel ring TT makes for longer wear. The rotor

[1] *Comptes Rendus*, 180; 1389, 1925; *Jour. de Phys. et Rad.*, 8: 443, 1927.

[2] See Beams, *Rev. Sci. Inst.*, 1: 667, 1930; Beams and Weed, SCIENCE, 74: 44, 1931.

[3] See above references, Girard and Chukri, *Comptes Rendus*, 196: 327, 1933, and Garman, R.S.I. 4, 450, 1933.