

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 121, No. 17

CHICAGO, ILLINOIS
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APRIL 24, 1943

PERSONALITY CHANGES FOLLOWING SUBSTITUTION THERAPY IN PRE- ADOLESCENT EUNUCHOIDISM

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The dramatic physical changes resulting from the administration of testosterone and its derivatives to males with hypogonadism have been the subject of many reports since the introduction of this specific therapeutic agent.¹ The anatomic and physiologic changes have received special attention, but the descriptions of the physiologic changes have with few exceptions been meager; in general, these factors have been overlooked.² It is our purpose in this communication to present in greater detail the changes of personality that occurred following specific treatment in 7 cases of eunuchoidism.

The cases under observation represent moderate to severe types of hypogonadism that have been treated by the subcutaneous implantation of pellets of testosterone or its derivatives. In 3 cases previous therapy in the form of injections of testosterone propionate in oil had been given. Two types of pellets were used. Small pellets of methyl testosterone were prepared by compressing the crystalline material³ in a mold.⁴ Approximately 15 pellets representing 150 mg. were implanted every ten weeks. Four large pellets, each weighing approximately 200 mg. and generally composed of testosterone propionate, were implanted once a year. The effectiveness of therapy was determined by the physical changes, particularly the enlargement of the penis and prostate, the appearance of pubic and axillary hair, the deepening of the voice and enlargement of the neck and the alteration in body contour

with the development of the muscles of the shoulders, arms and thorax. Associated with these changes were a development and increase in libido expressed by masturbation, an interest in women and, whenever possible, by intercourse. The concomitant feeling of well-being and of optimism and the change of attitude to the environment which are expressions of personality modifications that resulted from treatment will be described in greater detail.

The patients themselves have been very helpful in describing minutely the changes in personality following treatment. All had had much ineffective nonspecific treatment of various types before they came to us. They had learned to be quite skeptical and expected very little from any treatment. Thus the element of suggestion is fairly well eliminated. All the patients had become quite introspective since adolescence when at the age of 14 or 15 they discovered that they were different from other boys, and then in time they became convinced that there was very little possibility of any improvement in their condition. The patients were very reticent concerning their pretreatment existence until they saw that the rapid physical response to therapy was of a permanent nature, at which time they gave data previously withheld.

One must visualize the reaction of a young boy when he realizes that he has undescended testicles or that his testicles are atrophic. These boys in their early childhood were active, healthy, husky children able to compete with or even excel other boys; at adolescence they suddenly discover that they are different from other boys, who make fun of them. Whereas previously their rate of growth was on a par with the normal boys, at adolescence our patients ceased to develop sexually and to mature. The normal boys begin to excel them in sports and social activities and are gradually transformed into young men. Our patients remain adolescent, take on an abnormal body contour, retain a high pitched voice and show no growth of genitals. They doubt then that they are real men. This leads invariably to a great deal of resentment mixed with the feeling of rage and frustration, which is usually repressed, and the only thing evident on the surface is a feeling of bitterness and hostility to the world at large. The most important change effected by successful treatment is a better relationship to the world. All these patients describe in one way or another that they become warm, more affectionate, less hostile, less jealous and not so bitter and that they do not shrink from people any more. They meet men and women on an equal basis, and they are not afraid to compete. Together with this there comes a feeling of growth and security, and the patients state that they "are less jumpy, more firm, more definite, not so irritable." All this will be elaborated in greater detail in the review of the cases.

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Read in part before the California Medical Association, Del Monte, Calif., in May 1942.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

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2. Carmichael, H. T., and Kenyon, H. T.: Eunuchoidism: A Psychiatric and Endocrine Study of Six Cases, *Arch. Neurol. & Psychiat.* **40**: 717 (Oct.) 1938. Rennie, T. A. C.; Vest, S. A., and Howard, J. E.: Use of Testosterone Propionate in Impotence: Clinical Studies with Male Sex Hormones, *South. M. J.* **32**: 1005 (Oct.) 1939. Carmichael, H. T.: A Psychoanalytic Study of a Case of Eunuchoidism, *Psychoanal. Quart.* **10**: 243 (April) 1941.

3. The Ciba Pharmaceutical Company, Inc., Summit, N. J., supplied the powdered crystalline methyl testosterone and the testosterone propionate pellets.

4. Biskind, G. R.; Escamilla, R. F., and Lissner, H.: Implantation of Testosterone Compounds in Cases of Male Eunuchoidism, *J. Clin. Endocrinol.* **1**: 38 (Jan.) 1941.

These patients spend a great amount of energy in solution of the neurotic conflict created by the hypogonadism. Even though the conflict has factual rather than fanciful causes, the influence on the psychic life is the same. An emotional conflict in which the patient is not sure of his sex (and this occurs in many other conditions, including neuroses and schizophrenia) gives rise to a tremendous amount of speculation, indecision and a feeling of hopelessness. As with any other patient whose neurosis is resolved by psychotherapy or analysis, there is a newly gained feeling of freedom after successful treatment. There is a feeling that one can carry out one's own decisions without constant inner struggle and a feeling that one has become a different person. The energy which was previously spent in the solution of the neurotic conflict is now released, and the patient is able to do a good day's work without constant anxiety. This is indicated by the fact that all our patients said that their work takes them much less time and that in the same space of time they do more and better work. This, combined with a certain amount of self assurance and even aggressiveness, results in their giving up inferior positions and looking for, and finding, more remunerative employment. Several patients were able to go off relief and obtain independent positions. Other patients were advanced from subordinate to executive positions. All this is described by the patients themselves as "becoming more ambitious." There is less strain, less fatigue, more firmness, less suspiciousness and a growing feeling of security. Together with such changes there comes a feeling of "belonging," of being in unison with the world and a general feeling of well-being. The changes brought about by the treatment are described by the patients in various ways, depending on the educational and intellectual background.

REPORT OF CASES

CASE 1.—A. B., aged 29, a tall, lanky, asthenic looking man, appeared very lethargic, dull and apathetic. He had been a poor scholar and had to repeat the sixth and seventh grades. He was brought up in a broken home, was placed in an orphanage and ran away from school several times. He was involved in minor delinquencies and finally was committed to a school for delinquent boys at the age of 17. However, his behavior was very good after he left the institution. He was able to work as a janitor without returning to a life of crime. The patient stated that he noticed as a boy that his genitals were small, but he always hoped that they would grow. At the age of 15 he became aware that something was radically wrong with him, and that worried him a great deal. The patient began to masturbate at the age of 12. This habit has continued until the present time. His criminal activities coincided with the height of his anxiety about his sex organs. The only way he could prove his masculinity to the other boys was by stealing, hoping that this would be used as evidence of sexual potency. There was no history of homosexual relations. The patient was attracted to girls but never dared to approach them on account of the small size of his genitals. The impression he gave was that of a lethargic, withdrawn, introverted boy with a strong sense of inferiority, to which he reacted at first by criminal behavior and afterward by complete resignation and withdrawal.

Before treatment the following measurements were recorded: His height was 183.7 cm., span 192.5 cm., lower measurement 100 cm. His weight was 66.8 Kg. The penis was 3.5 cm. long and 5.5 cm. in circumference; the right testicle was 2 cm. in diameter and the left testicle was absent; the scrotum was small. The body hair was scant, with a feminine distribution, and no beard could be distinguished. The voice was high pitched. The bone age was between 16 and 18 years.

November 4, 1940 a subcutaneous implantation of 4 pellets of testosterone propionate totaling 800 Gm. was made.

One year after treatment the pellets were still palpable and effective. The penis measured 6.5 cm. in length and 7 cm. in circumference. The measurements of the body and the bone age did not change. The voice deepened. Body hair retained a female distribution but became more abundant. The facial hair required shaving every two weeks. The right testicle measured 3 cm. in diameter, but the enlargement was mainly in the epididymis.

When the patient returned a year later for examination we were surprised to see a tall, husky, rawboned, rangy looking man, self assured and confident. The first thing he did was to remark that he had quit his job and that he was looking for another position. He was better in every way. He liked more people. He was not so tired and felt much stronger. The patient stated that the work of a janitor was not interesting and he was now going to work in the shipyards as a welder. The following changes in his personality were evident: He felt and acted more alert, ambitious and imaginative; he had initiative and was more aggressive and even rebellious. The patient stated that he was more outspoken, but he himself is easier to get along with because he has become more firm and honest and does not try to court every one's favor; he is not as cranky and irritable as he used to be. In reference to his sex life the patient stated that he had frequent erections and was going with a girl.

CASE 2.—C. D., aged 20, was tall and thin, had a very broad chest and large buttocks, had no facial hair, spoke in a high pitched whisper and was shy and retarded. He stated that he came to California only four years before from a farm in the Middle West. He did all kinds of work and was on a National Youth Administration job in the city. For the past six weeks he had been working as an attendant in a hospital. The patient stated that he had known nothing about sex until he was 15. He hoped that his penis would grow, but it didn't. At the same time he noticed that instead of a chest he had a bosom and that his hips were becoming very large. He tried intercourse several times but had difficulty getting an erection and had premature ejaculations. Being aware of the small size of his penis he was very shy and kept away from girls. He also avoided boys. He was depressed, very quiet and discouraged.

Before treatment the following measurements were recorded: His height was 178.2 cm., span 175.6 cm., lower measurement 94.8 cm. His weight was 87.3 Kg. The penis was 4 cm. long and 8 cm. in circumference. Each testicle was 3 cm. in diameter and held close to the pubic bone. The scrotum was small. The body hair was scant, but the pubic hair extended slightly to the umbilicus. The voice was moderately high pitched. There was no beard.

Subcutaneous implantation of 2 pellets of testosterone propionate totaling 400 mg. was made. One pellet sloughed out three months later.

Examination ten months later showed no change in the size of the testicles. The penis was 5.6 cm. long. The voice had deepened slightly; the facial hair was fuzzy and required shaving once or twice a month. An acneiform eruption was present on the face. There had been a gain in weight to 100 Kg.

When the patient came six months later he stated that he felt much better, and one could notice a decided difference in his appearance. There were greater poise, self assurance and optimism. The patient stated that he had been working all this time in a hospital but now he was leaving it to work in an airport. He had broadened out physically and had gained weight. He was going out with girls. He was quite active sexually, had good erections and was able to have satisfactory intercourse. It bothered him, however, that his penis shrank after intercourse. The patient planned to get married as soon as his job at the airport materialized. He was quite inarticulate but tried to convey the impression that "he was more sociable, not so bashful and more self confident."

CASE 3.—E. F., aged 33, was an undertaker and presented a sober, funereal appearance. At the age of 8 years a bilateral orchiopexy had been done, but the testicles failed to grow. For many years various types of glandular therapy had been tried without success, and the typical habitus of preadolescent eunuchoidism developed. After three years of high school

education he worked at odd jobs. For the past thirteen years he had been an undertaker. He had had occasional erections but no seminal discharge. He went with his wife for six years before he married her. They were both very much in love with each other and finally the patient explained his condition to her and stated that he was not able to have intercourse. The girl understood and consented to marry him. They had been married for six months and the wife was still a virgin. Their sexual life consisted largely in mutual masturbation. The patient stated that up to the age of 18 or 20 he was frequently approached by homosexuals. He reacted violently to such attempts, as he had been warned by a physician that such approaches would be made to him.

Before treatment the following measurements were recorded: height 170.6 cm., span 170 cm., lower measurement 90 cm. and weight 63.6 Kg. The penis was 2.5 cm. long and 5 cm. in circumference. The scrotum was very small and appeared bifid with a small mass in each side. The body hair was extremely scant, with a feminine distribution, and facial hair was almost invisible. Bone age studies showed complete fusion of all epiphyses. The basal metabolic rate was minus 26 per cent. The voice was high pitched.

Treatment consisted of the following implantations:

Dec. 23, 1940, 18 pellets of methyl testosterone, total 169.5 mg.

Feb. 26, 1941, 4 pellets of testosterone propionate, total 800 mg.

March 30, 1942, 2 pellets of testosterone propionate, total 400 mg.

Fifteen months after the first implantation the penis measured 5.5 cm. in length and 7.5 cm. in diameter. The voice became deep. There was moderate proliferation of body hair and a scant fuzz appeared on the face. His height and weight remained stationary but his shoulders became heavier and his hips thinner.

When the patient came in April 24, 1942 there was a decided change in his appearance. He was alert, eager, snappy and peppy, his eyes were shining and he was grinning from ear to ear. His funereal appearance was gone and he was wearing bright sport clothes. The patient stated that he felt "swell"; his work was going along very satisfactorily and he was getting a promotion. He stressed the fact that he had changed physically a great deal. Ten days after the implantation he began to have emissions of seminal fluid. He had definitely penetrated his wife and both he and she enjoy intercourse. She now has definite orgasms. His wife is more cheerful and the treatment has brought them together. The patient stated that he is a different person, small things do not bother him, he is not so jumpy, he is less irritable, he thinks differently, he is more secure and he is able to make definite plans and carry them out. The patient discussed his plans of enlarging his business which seemed to be quite realistic and which he has been able to follow through since the interview.

CASE 4.—G. H., aged 40, an alert, eager, active business man, was extremely ingratiating and almost too eager to cooperate. He stated that he had had undescended testicles and that at the age of 13 an orchiopexy was unsuccessful; no testicular tissue was demonstrable. Six years later he had an unsuccessful transplantation of testicles from a convict. He was always aware of the small size of his penis and the atrophic testicles, and he reacted to it by being very active, aggressive and positive. He worked in all sorts of occupations, including that of ship fitter and sailor, and was very active in various sports. He was very intelligent and graduated from high school in three and one-half years. He graduated from a business school of one of the local universities and immediately after this was given a position, first as a salesman, then rapidly promoted to a responsible executive position. At the age of 30 he began to go out with a girl and married her when he was 33. Before he was married he had explained to his future wife his difficulty, but she loved him so much that it did not matter. They had occasional intercourse with no seminal discharge.

Before treatment the following measurements were recorded: height 181 cm., span 186 cm., lower measurement 106 cm., and weight 94.7 Kg. The hair on the face was scant and downy; body hair was almost absent and the sparse pubic hair had

a feminine distribution. The voice was high pitched. The skin of the face was soft and finely wrinkled. The penis was 4 cm. long and 6 cm. in circumference. In the erect state it was 7 cm. long. The scrotum was very shrunken and appeared bifid, and no tissue was palpable in it. On rectal examination the prostate and seminal vesicles were not palpable. The basal metabolic rate was determined twice and was minus 23 per cent and minus 19 per cent.

Five separate implants of methyl testosterone pellets were given between March 1940 and May 1941, making a total of 740.5 mg. An average of 17 pellets were implanted each time. Four large pellets of testosterone propionate totaling 800 mg. were given in May 1941. They were effective until June 1942, when 3 additional pellets were implanted.

After two years of treatment the penis measured 7 cm. in length and 7.2 cm. in diameter. The prostate was palpable. The pubic hair became heavier but remained feminine in distribution. The sallow, fawn color of the skin of the face disappeared and the characteristic facial periorbital wrinkles became much less evident. The hips became smaller and the shoulders enlarged. The voice was deep and well modulated.

When the patient came in following treatment he described the changes as follows: His drive for success has been more intense and he has had more financial success than ever before in his business. He has less fatigue and more energy. He has much more sex drive. He was very proud of the fact that hair had begun to grow all over his body and that he had emissions of seminal fluid. Intercourse was complete and pleasurable. The patient stated that he was more affectionate, that he did not try to please people as much as he had before and that he liked people more. He was less jittery and not so insecure; as he expressed in a jubilant exclamation, "I am part of the world, I am normal."

CASE 5.—I. J., aged 27, was tall, asthenic, pale and beardless and looked like a boy of 18. The patient stated that he had come from a large family, had gone to high school and had studied for two years in a midwestern university. At the age of 20 he came to San Francisco and began to work in a drugstore. He had had mumps in childhood but did not remember whether that illness had been complicated by orchitis. He had had occasional erections but there had been no emissions. He was treated with testosterone propionate for eunuchoidism by a physician until referred for implantation therapy. The patient stated that the treatment produced the following changes: He had had a high pitched voice which now was normal. His attitude in conversation was more free. He showed a greater sense of humor. He was more aggressive and recently he was promoted to the job of an executive. Before treatment he could not take charge of people. His orders were not carried out. He was afraid to give orders for fear people would laugh at his high pitched voice. Now his voice was more resonant. He could assume a definite tone of authority and he talked more slowly and was more deliberate. His associates took orders from him because he was more consistent and less arbitrary. Before this he was always in difficulties and disputes with the other employees, and for these reasons he was not promoted. He could meet girls now and they did not frighten him. Recently he was in a girl's home and was told by the family that whereas a year ago he would read a book when he came to see the girl at present he was really interested in her and wanted to be with her alone. He had regular erections and occasional emissions. Prior to the change in his voice he had to be very careful in choosing his friends for fear they would try to make homosexual approaches to him; now he was not afraid of that. Since he had been under treatment he felt confident that he could become a real man.

Before treatment the patient was tall, thin, long legged and beardless and had a high pitched voice. The complexion was sallow. Pubic hair was slight in amount and axillary hair was negligible. The penis was small, the left testicle was extremely atrophied and the right testicle was much smaller than normal. The prostate and seminal vesicles were not palpable. His weight was 56.8 Kg., the height was 179 cm., the lower measurement 96 cm. and the span 182 cm. He received a total of fifty-nine injections of 25 mg. of testosterone propionate in oil, three injections a week up to March 1940.

Implants of methyl testosterone pellets were started in April 1940; a total of 511 mg., distributed in four implantations, was given until December 1940.

The large pellets of testosterone propionate were implanted in December 1940, but the original 4 sloughed out and 3 additional pellets were implanted in March 1941. These also were extruded from the wound and an additional 4 large pellets totaling 800 mg. were implanted in July 1941. These proved entirely satisfactory and effective through May 1942.

A recent examination showed that there had been no change in major body measurements but an increase in weight had occurred. The penis more than doubled in size and measured 9 cm. in length and 8.5 cm. in circumference. His voice was deep. His neck and shoulders had increased in size. The pubic hair was heavier and was growing toward the umbilicus.

CASE 6.—K. L., aged 19, a tall blond boy, spoke intelligently and freely. He stated that he had one undeveloped descended testicle and one undescended testicle. Two attempts at orchidopexy had failed to place the undescended testicle in the scrotum. He was brought for treatment by his father, who stated that the patient had failed to mature in that his play activities were with children five and six years his junior; his mannerisms were of the fussy feminine type, and his beard and genitals were not developed. The patient had no sexual desire; he had had occasional erections but no seminal emissions. He was very bashful and afraid of girls. He was always somewhat nervous, jittery and restless. When he was small, things used to "bother" him at home; apparently there was a great deal of discord in the family. Since adolescence he had been in a constant state of anxiety. The boys used to tease him and talked about the fact that he had no testicles and laughed at him because he had a small penis. Before implantation therapy was started he had had sixteen injections of testosterone propionate, 10 mg. in oil, given by the referring physician.

The patient was immature and boyish, appearing younger than the stated age. His height was 168 cm., the span 171 cm. and the lower measurement 87.5 cm. His weight was 68 Kg. The voice was high pitched and the body hair scant. The penis was 6 cm. long. The scrotum was small, shriveled and limited to the right side and contained a pea sized bit of tissue. The prostate was barely palpable. His bone age was placed at 13 years. The basal metabolic rate was minus 16 per cent.

Implants of methyl testosterone pellets were started in November 1939, and up to December 1940 he had had five implantations averaging 18 pellets each. The total amount of methyl testosterone used was 643.8 mg.

Four large pellets, each 200 mg., were implanted in December 1940, but several sloughed out so that an additional 4 similar pellets were implanted in September 1941. These have been effective for almost one year.

The physical changes resulting from treatment were an increase in body and facial hair, a deepening of the voice and development of an acneform eruption on the face and shoulders. The penis measured 10 cm. in length and 9.5 cm. in diameter. The scrotum enlarged. He grew 7 cm. in height.

Following treatment the patient noticed that there had been a decided change in his libido. He started to go out with girls. He developed sexual desire, which he has desired to control until marriage. He began to go to dances and enjoyed going with girls. He was more eager now to succeed! He was not satisfied with his job in a gas company and intends to go into the army. He had occasional nocturnal emissions and frequently dreamed of girls; occasionally he had to resort to masturbation. His anxiety was greatly diminished. He was more calm and more definite and self assured.

CASE 7.—M. N., aged 21, a student in one of the local universities, was referred to the clinic for implantation therapy for typical preadolescent eunuchoidism. The patient was a tall, good looking, attractive, blond boy with a pleasant engaging smile; he was very intelligent and obviously well brought up. As a little boy he could "lick" other boys in school, but after the age of 12 he began to lose out, and instead of being the leader in his class the other boys began to pass him up. They became huskier and taller and better athletes than he was, whereas previously the patient was much stronger than they were. The family did not worry about it, since both

his father and mother were quite late in maturing. Prior to the specific androgenic treatment the patient had had no erections and no emissions. The patient stated that on several occasions he had been approached by homosexuals but repulsed their advances. He knew about homosexuality from other boys in his fraternity.

Physical examination in September 1941 revealed the following measurements: height 178 cm., span 178 cm., lower measurement 92.5 cm. and weight 62 Kg. The penis was 10 cm. long and 9.7 cm. in circumference. The scrotum was fairly loose and wrinkled and contained a mass 2 cm. in diameter on the right side; nothing was palpable on the left side. The pubic hair was fairly abundant but of feminine distribution. Axillary hair was scant and facial and body hair was absent. The bone age was less than 14 years. The basal metabolic rate was plus 10 per cent.

In the year before the examination described he had received two or three injections a week of testosterone propionate, 23 mg. in oil, for approximately eight months, terminating four months before the examination.

Three large pellets of testosterone propionate were implanted subcutaneously in September 1941.

Examination in February 1942 showed no essential change in the foregoing measurements. The voice was slightly deeper and better modulated. The erections and nocturnal emissions occurred as frequently as they had during the testosterone propionate injections.

The patient stated that following the specific therapy he was much better and quite different. He developed an interest in girls, his libido increased and he has masturbated occasionally. He left the university and obtained a position in one of the shipyards. He was more mature and stable, had greater interest in his work and was planning to enter naval aviation. He was going steadily with a girl whom he planned to marry within a short time. The patient stated that he was more mature and better balanced, was able to save money and was less of a kid.

COMMENT

In reviewing these cases, one finds that there are two ways in which these patients reacted to their sexual inferiority: The more simple, less complex persons with limited background and intelligence reacted to their eunuchoidism by submissiveness and withdrawal. They became masochistic, detached themselves from people, shying from the company of women as well as avoiding association with men. In some instances there was a defensive attempt at pronounced aggressivity, with efforts to prove to the other boys that they were regular fellows. They became leaders in their neighborhood gangs; one followed a criminal career. These attempts at compensation were usually quite sporadic and lasted only a short time. They carried on more or less routine jobs with inferior salaries, not daring to ask for a raise in pay. They did not go out with girls for fear that their inferiority would be discovered.

The second group, with more intelligence and better backgrounds, reacted to their feeling of inferiority resulting from the hypogonadism by overcompensation. Thus our executive (case 4) from the very beginning became a very active, extroverted person, a leader in activities and sports. Nonetheless he was in constant dread that his condition might be discovered. At the same time there were definite evidences of psychosexual maturity with capacity to care for another person of the opposite sex. Thus two of our patients had married not for the sake of appearances but of genuine love for their wives. This latter point is important to bear in mind in connection with the question of homosexuality, which will be discussed later.

In general then the reactions of these patients were either of extreme submissiveness or of aggressivity and arrogance. Frequently these were intermingled

with feelings of jealousy and hostility. These patients were constantly on guard, vigilant and never at ease.

Following successful treatment there was a decided change in the aforementioned attitude with a feeling of poise and security. The patients were no longer on guard lest some one take advantage of them, lest they be made completely feminine. In regard to the married patients, as the treatment gave them the capacity to carry out normal sexual relations there was a noticeable increase in the sense of security and feeling of fulfillment, felt both by the patients and by their wives.

It is significant that in spite of the hypogonadism and attendant feminine build of these patients none of them became homosexual. As stated in the histories, homosexual approaches and attempts at seduction were made, but the patients reacted with repugnance and disgust, and none of them recalled having had any sexual experience with men after adolescence—none beyond the usual experimental sex play in childhood when our patients were normal, husky children. As previously mentioned, 2 of the 7 patients married and 1 had definite plans of marrying, and though the element of keeping up appearances was dominant they appeared to be genuinely in love.

Thus, in this group of patients at least, there was no evidence that hypogonadism was in any way associated with homosexuality. Comparing this group with a similar group of 15 homosexuals who came to us in connection with the selective service, we have come to the following conclusions: All the homosexual boys had large, well developed sexual organs with well developed testicles. Nearly all of these homosexual men had strong sex drives, as evidenced by frequent erections, nocturnal emissions and fantasies—all, however, misdirected to their own sex. None of them had any desire for women, but all of them had very strong sexual drives with libido directed to other men either passively or actively. Comparing these two groups, one cannot avoid a conclusion that there must be psychologic rather than physiologic factors which tend to direct men into homosexuality.

SUMMARY AND CONCLUSIONS

1. Psychologic changes took place in 7 patients with preadolescent eunuchoidism treated by implantations of testosterone derivatives.
2. Anatomic and physiologic changes that resulted from specific androgenic therapy did not differ from those described in the literature.
3. The eunuchoid patients had reacted to their defect either by strong passivity and submission, with sporadic attempts at overcompensation as expressed in delinquent behavior, or else by overcompensation in becoming very aggressive, domineering and overactive.
4. The psychologic changes following successful therapy consisted in gaining a feeling of security, greater emotional stability and a feeling of belonging, with the disappearance of a constant state of vigilance, suspiciousness, pettiness, fussiness, jitteriness and a more or less constant state of anxiety. The improvement can be compared to a successful therapeutic result in a typical neurotic state.
5. In our series eunuchoidism did not preclude a normal feeling of affection and love for members of the opposite sex.
6. A comparison with a control group of 15 homosexual men indicates that psychologic rather than physiologic factors are responsible for the development of homosexuality.

Corner Post and Scott streets.

TREATMENT OF EDEMA OF RENAL ORIGIN

REPORT OF TWELVE CASES

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The patient who suffers from nephrosis or from the nephrotic state of chronic glomerulonephritis has as his predominant symptom edema, which is characteristic of this clinical entity. Not only is it the main symptom, but it is the outstanding feature of his illness, which keeps him an invalid and prevents his maintaining a normal or nearly normal economic and social existence. When the nephrotic features of glomerulonephritis predominate, hypertension, with its accompanying symptoms due to vascular changes in brain, heart and kidneys, is rarely present. Renal function is usually good and there usually is no retention of nitrogenous matter in the blood. There is little or no anemia. In other words, except for the generalized edema and the symptoms secondary to it the patient usually feels well, and if the edema was absent he could live a fairly unrestricted life. To attain such an end and to rehabilitate patients who have been so incapacitated we are presenting an outline of therapy which has proved satisfactory.

Without going into detail, the edema of nephrosis is the result of retention of water and the accumulation of an excess of sodium chloride in the tissues. These changes are brought about by loss of protein in the urine or lack of protein in the patient's diet or, occasionally, both. This results in a decrease in the concentration of serum protein, a subsequent decrease in colloidal osmotic pressure of the serum and a tendency to edema formation and the retention of salt in the tissues of the body.

The following significant laboratory findings are present: albuminuria, a decrease in the concentration of plasma protein and an increase in the amount of sodium chloride in the plasma and tissues. The colloidal osmotic pressure of the plasma (normal, 21.4 mm. of mercury or 360 mm. of water) is decreased. Anemia, definite hematuria and pronounced retention of nitrogenous waste products usually are absent. Hypercholesterolemia is present and the basal metabolic rate usually is low. Vascular changes are rare and occur only in cases in which there is extensive glomerular involvement. There is a decrease in plasma volume.¹

Since the renal lesion cannot be attacked directly, some means of eliminating the sodium chloride and water from the body through the urinary tract must be employed. The serum protein must be augmented. The intake of water and salt must be restricted. Although modified for each case, an outline of treatment based on the clinicochemical factors just mentioned has been found to be most efficacious. It consists of dietetic and diuretic measures which restore the physico-electrolytic balance in the body.

From the Division of Medicine, Mayo Clinic.
1. Harris, A. W., and Gibson, J. G.: Clinical Studies of the Blood Volume: VII. Changes in Blood Volume in Bright's Disease With or Without Edema, Renal Insufficiency or Congestive Heart Failure, and in Hypertension, *J. Clin. Investigation* 18: 527-536 (Sept.) 1939.

GENERAL

Pediatric Board to Hold Two Examinations.—The American Board of Pediatrics announces that because of the large number of applicants two oral examinations will be held this fall, one in New York, November 20-21, and the other in Cincinnati, December 11. A written examination will be held locally under a monitor, October 8.

Changes at Ciba Pharmaceutical Products.—Dr. Ernest Oppenheimer, formerly of New York, has been chosen vice president of the Ciba Pharmaceutical Products, Inc., Summit, N. J., in charge of medical research, effective within a few months. Mr. J. J. Brodbeck was recently elected president. Lee J. Perrin, New York, was elected chairman of the board of directors, Norman F. Storm vice president in charge of production and Vincent A. Burgher vice president in charge of sales.

Winners in Health Honor Roll Contest.—The U. S. Chamber of Commerce and the American Public Health Association have announced the winners in their annual contest in community health promotion and preservation. More than five hundred and fifty communities participated. The thirteen winning cities are Milwaukee, Madison and Racine, Wis.; Detroit; Baltimore; Greenwich and Hartford, Conn.; Newton, Mass.; Reading, Pa.; Hackensack, N. J., and Peoria, Evanston and La Salle-Peru-Oglesby, Ill. The twenty winning counties are Sanilac, Van Buren and Saginaw, Mich.; Davidson, Gibson and Memphis-Shelby, Tenn.; Fayette, Madison and Jefferson, Ky.; Lauderdale, Washington and Jones, Miss.; Olympia-Thurston and Whitman, Wash.; Arlington, Va.; Forsyth, N. C.; Glynn, Ga.; Gallatin, Mont.; El Paso, Texas, and Santa Barbara, Calif.

Report of Blindness Prevention Group.—The National Society for the Prevention of Blindness expended \$167,879 in 1942 to carry out its various activities. Chief on its projects were a glaucoma control demonstration and five eye clinics in New York, from which the society expects to be able to formulate recommendations for a nationwide glaucoma control program. The report indicated that the society had intensified its industrial program brought about by the expansion of industry, increased employment of women and older men and steady acceleration in the production of war materials, all of which have placed an additional burden on eyes. Working with industrial executives, safety engineers and others in establishing eye safety standards, the society has formulated recommendations which, if followed, according to the report, can not only increase efficiency and safety but will make greater manpower available through correction of defective vision among workmen who are otherwise able bodied.

American-Soviet Medical Society Formed.—Dr. Walter B. Cannon, professor emeritus of physiology, Harvard Medical School, Boston, is the president of the American-Soviet Medical Society, a new group founded to meet an increasing demand for information about the results and achievements of Soviet medicine. Dr. Henry E. Sigerist, director of the Institute of the History of Medicine at Johns Hopkins University, Baltimore, is the editor of a journal to be published by the society and to be known as the *American Review of Soviet Medicine*. Temporary offices of the society are at 130 West 46th Street, New York. Through meetings, the publication of a journal and the establishment of a library of information, the society will tell physicians of America and members of the allied professions on what problems Soviet colleagues are working and what is being done to solve these problems. The society will also send American medical books and periodicals to the Soviet Union to keep the Russians informed of scientific developments in this country and to stimulate closer cooperation between the medical corps of the two countries. As soon as conditions permit after the war, the society hopes to promote the exchange of students and scientists and to sponsor study hours in the two countries.

Special Society Elections.—Dr. E. Benjamin Gillette, Toledo, Ohio, was elected president of the Tri-State Medical Society of Indiana, Michigan and Ohio at its annual meeting in Ann Arbor recently and Dr. Floyd R. Nicholas Carter, South Bend, Ind., was chosen vice president. Dr. Oscar P. Klotz, Findlay, Ohio, is secretary and Dr. Fredrick F. Yonkman, Detroit, treasurer. The 1944 convention will be in Toledo. —New officers of the American Institute of Nutrition chosen at a recent meeting in Detroit include Dr. Howard B. Lewis, Ann Arbor, Mich., president; Icie G. Macy Hoobler, Ph.D., Detroit, vice president; Arthur H. Smith, Ph.D., Detroit, secretary, and William H. Sebrell Jr., Bethesda, Md., surgeon, U. S. Public Health Service, treasurer. —Dr. Edwin G. Zabriskie, New York, was elected president of the American

Neurological Association at its sixty-ninth annual meeting in New York, May 7. Dr. Henry Alsop Riley, New York was reelected secretary. The dates of the next meeting will be decided sometime in December. —Dr. Karl M. Bowman, San Francisco, was chosen president-elect of the American Psychiatric Association at its annual meeting in Detroit in May and Dr. Edward A. Strecker, Philadelphia, was installed as president. Dr. Winfred Overholser, Washington, D. C., was reelected secretary-treasurer.

CANADA

Dr. Dafoe Dies.—Dr. Allan Roy Dafoe, a country practitioner who attained worldwide renown through the birth of the Dionne quintuplets, died at a hospital in North Bay, Ont., June 2, aged 60. Dr. Dafoe died five minutes after he had been admitted to the hospital suffering from pneumonia. Born in Madoc, Ont., May 29, 1883, Dr. Dafoe graduated at the local schools and took his M.B. degree at the University of Toronto Faculty of Medicine in 1907, where he also received his M.D. degree in 1928. He had been carrying on the activities of a simple country doctor in the rural community of Callander, but on May 28, 1934, after he had officiated at the births of the Dionne quintuplets, Dr. Dafoe became an internationally known figure. When he arrived at the Dionne home at 4 o'clock in the morning, two of the babies had been born and the third was arriving. Dr. Dafoe was given the Order of the British Empire by the king. In 1935 he was made an honorary member of the Toronto Academy of Medicine and in 1937 an honorary member of the Ohio State Bureau of Child Hygiene. He had also been medical health officer in North Himsworth Township and an advisory editor of *Parents' Magazine*. In 1942 Dr. Dafoe resigned as physician to the Dionne quintuplets.

LATIN AMERICA

Hospital News.—The new Hospital Infantil of Mexico City was formally opened on April 30. General Manuel Avila Camacho, president of Mexico, presided. Among the speakers were Dr. Federico Gómez, head of the Hospital Infantil, who reviewed the history of the hospital, and Dr. Gustavo Baz, the secretary of public welfare.

Agreement to Develop Quinine Plantation in Guatemala.—The development of the largest cinchona plantation in the Western Hemisphere under an agreement between Guatemala and United States agencies has been announced. The plantation, which is known as "El Porvenir," has been controlled by German interests through the Central American Plantations Corporation, but controlling stock of this corporation now is in the hands of the United States Alien Property Custodian and transfer of the property to Guatemala is being arranged. The agreement for development of the property has been worked out among the Guatemalan government, the plantation corporation and the United States Board of Economic Warfare. The agreement has been ratified by Guatemala's legislative assembly. How many cinchona trees are on the 17,000 acre plantation in the District of San Marcos has not been determined. A large part of the acreage is devoted to coffee. The property is near good roads and only 9 kilometers from the Pan American Highway. Bark may be trucked 35 miles to Ayutla on the Mexican border. From there it can move to the United States by rail. A laboratory has been established at El Porvenir for testing the bark. There will be studies as to the best trees, experiments with grafting and transplanting, and setting out of seed beds. Drying kilns have been set up. It takes only a fourth as much time to dry this way as by the old method of spreading out in patios. Several hundred people live on the plantation, which is on the slopes of Tajumulco, Guatemala's highest mountain. The trees grow mostly at elevations of between 4,000 and 5,000 feet. The mountain rises to 14,000 feet.

CORRECTIONS

Prevention of Sulfadiazine Crystalluria.—In the fourth line of the Current Comment by this title in THE JOURNAL, May 29, page 311, "Gilligan and his colleagues" should read "Gilligan and her colleagues." The author, whose work was referred to in the March *Proceedings of the Society of Experimental Biology and Medicine*, was Dorothy Rourke Gilligan.

Personality Changes Following Substitution Therapy.—In the article by Dr. Jacob Kasanin and Lieut. Col. Gerson R. Biskind entitled "Personality Changes Following Substitution Therapy in Preadolescent Eunuchoidism" in THE JOURNAL, April 24, in the second line of the fourth paragraph of the first column on page 1319, the word "diameter" should have been "circumference."