of weekly onset. There is considerable mental deterioration at present.

The case was admitted to my service at Craig Colony several years ago and is still there, a confirmed epileptic. I am indebted to Dr. Shanahan, Superintendent of the Colony, for the case notes here given.

NOTE.—Since this article was written, Richard Stern³ has published a study upon the future of poliomyelitic children, and has found two cases of epilepsy developing several years after the initial disease. His material embraces 107 cases of poliomyelitis. This author suggests that so long an interval between the poliomyelitis and the subsequent epilepsy took place that suspicion is justified that the affections were coincidental. No data whatever are added. The cases are identical with my case, L. L., in which epilepsy was sequent to poliomyelitis contracted in infancy and in which the comitial disease appeared ten years after the onset of the acute poliomyelitis.

THE VALUE OF NAUHEIM BATHS IN NEPHRITIS WITH HIGH BLOOD PRESSURE.

BY E. AVERY NEWTON, M.D.,

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DURING 1905 and 1906, while associated with the late Dr. Heineman in his work at Nauheim, I paid particular attention to the blood pressures of patients before, during, and after taking the baths, and found in cases of high blood pressure (170 mm. Hg. and over) resulting from kidney complications, that the warm saline baths had a more beneficial effect than the cooler baths containing carbonic acid gas.

Up until that time I had always shared the general belief that Nauheim baths were absolutely contraindicated in all cases of marked kidney disease, and in the literature on the use of the Nauheim treatment which I have consulted, kidney disease, when mentioned at all, is regarded as a contraindication to the baths.

The first thing mentioned by Heineman¹ under contraindications to the Nauheim treatment is chronic Bright's disease. Richard Greene² says: "After numerous trials, carefully watched and carefully conducted, Schott found that almost any form of heart disease was benefited by the treatment he elaborated. I have said

³ *Jahrb. f. Psychiatrie, etc.*, 1911, No. 182.

¹ *Medical Record*, June 22, 1901.

² *The Schott Treatment for Chronic Heart Diseases.*

almost, because it would manifestly be unsuitable for thoracic aneurysm, and much care would have to be observed in treating cases of extensive aortic insufficiency. Also in cases complicated by arterial capillary fibrosis, and small granular kidney." While Groedel² as recently as 1910 expressed the following opinion: "Bei patienten mit ungewöhnlich hohem blutdruck, 190 mm. Hg. und mehr, haben wir zuweilen, gerade infolge der vermindernung des blutdruckes, schwindelanfälle gesehen. Meist sind dies patienten mit gleichzeitiger nierenaffektion. Wir warnen deshalb davor, solche patienten zur kur nach Nauheim zu schicken, desgleichen patienten mit sehr grossen aneurysmen."⁴

These observers, whose wide experience with the Nauheim treatment lends weight to their statements, voice the general belief on this subject. I have found that nearly all physicians are of the opinion that patients with marked kidney lesions are unsuited to the Nauheim baths. My own experience, however, is at variance with this view, for not only have I failed to find a case of nephritis that has in any way been harmed by taking the baths at the proper temperature, but on the contrary, all of my cases have improved. We know that cold bathing, generally speaking, is harmful in such cases, and the baths as usually employed in Nauheim at a temperature of from 83° to 90° F. (28° to 32° C.) are comparatively cool baths. This fact may explain, in part at least, why patients with kidney disease have, as a rule, actually been made worse by the taking of such baths.

In my work at Nauheim during the past three years I have observed a number of cases referred for the cure, in whom various grades of nephritis were present. All of these cases, without exception, were improved by the use of the mild, warm, saline baths given at or near 95° F. (35° C.). Many of these cases have arrived with systolic blood pressures ranging from 170 to as high as 230, and in all of them the blood pressure has been reduced and the kidney condition improved, in some cases albumin and casts have entirely disappeared. Some of these patients have returned once, and others twice, and in these cases I have found that the benefits derived from the first cure have been lasting, some of them showing no albumin and casts on their return a year later, while in others the albumin and casts, though present, were found in less amounts than on the first visit, and the blood pressure had remained lower.

The beneficial influence on high blood pressure and albuminuria which I have observed following the use of suitable Nauheim baths is best shown by the following cases:

² Bad Nauheim, 1910, p. 118.

⁴ With patients who have unusually high blood pressure, 190 mm. Hg. and more, we have noticed occasional dizzy spells on account of the diminution of the blood pressure. Most of these are patients who have kidney trouble at the same time. We, therefore, warn against sending such patients for a cure to Nauheim, also patients with large aneurysms.

CASE I.—M. D., aged thirty-seven years, married twelve years; one child living, aged three years; two miscarriages. Severe headaches since miscarriage in 1904; eclampsia at birth of last child, an eight months' gestation. She was totally blind following this for two months, when she began to see rays of light and could tell light and dark. Her eyes have slowly improved, until she now has 1.5 vision. While looking at an object it usually changes color. Nearly everything looks red, changing to yellow or purple.

When this patient arrived at Nauheim, July 19, 1909, her blood pressure was 160, pulse 100, and she was very nervous. The urine contained a trace of albumin, but no casts. As her time was limited, she was able to take only eighteen warm saline baths. On her departure her blood pressure was 130, pulse 80; she was much less nervous, and her headaches were less severe.

She returned on May 17, 1910, feeling much better than on the previous year. She now had almost none of the high pressure and headaches, unless she overdid. Her eyesight was much improved, but far from normal. The blood pressure on arrival was 145, pulse 80. The urine contained no albumin nor casts. While here she was given twenty-three warm saline baths, to the last six of which mother lye was added. She was then sent to Switzerland to rest four or five weeks. She returned to Nauheim on August 4, and was then given eighteen warm, saline baths, to which, after the sixth bath, mother lye was added.

A note taken June 28, 1910, states: She feels much relaxed from the baths, vision steadily improving; every few days she sees things about her clothes and room which she did not notice before. The improvement in detail and color sight is most marked. In 1909 blue, gray, and lavender were all the same color to her, and usually could not be distinguished from white. While in a jewelry store a little over a week ago she looked at two pieces of jewelry—one lapis-lazuli, the other amethyst, one gold mounted, the other silver. Both looked alike to her then. Two days ago she was looking at them and the colors were quite distinct. She says that her ability to distinguish colors has improved remarkably the last few weeks since she has been taking the cure at Nauheim.

In January of 1911 I saw her in San Francisco. She was able to read, write, and play cards. I went with her to the ophthalmologist, who had made repeated examinations of her eyes since her attack in 1906. He told me that for a year or more before her first visit to Nauheim her eyes had not improved, and that he was much surprised at the marked improvement after her return from there, and that there had been even more improvement since the last cure than there had been after the first course of treatment at Nauheim.

She returned to Nauheim for treatment on July 20, 1911. Her blood pressure was 135, pulse 70. Her urine was free of albumin, and there were no casts. She had had practically no headaches

except very slight ones after indiscretions in diet. While here she was given sixteen thermal or brine baths. The blood pressure and pulse remained the same.

CASE II.—M. L., aged fifty-eight years. He arrived at Nauheim July 27, 1909. He had been first sent to Nauheim in 1901 on account of cardiac dilatation and endocarditis. At that time he was only able to take a few baths, and had to use a wheel chair constantly. A week after he left Nauheim he began to feel much better, and gained constantly. He returned in 1902, took the first and second cure, was much improved, and continued to feel well several years thereafter.

Three years ago, on awakening, he found his right leg cold. When examined by a physician a thrombophlebitis was found. Later he was sent to Nauheim, where examination showed that his heart was dilated, the left border extended one and one-half inches beyond the left midclavicular line; the first sound was weak and diffuse, the second sound normal; his blood pressure was 160, and his pulse 104. He was given sixteen warm saline baths and four thermal, sprudal baths. His blood pressure was gradually reduced to 130, and his pulse came down to 80.

His urine on arrival showed albumin, 0.014 per cent., and hyaline and granular casts. One week later the albumin was 0.012 per cent., there were hyaline, but no granular casts. Ten days later there was 0.003 per cent. of albumin, a very few hyaline, and no granular casts. On August 25, eight days later, the quantity of albumin was too small to estimate quantitatively, and there were no casts.

CASE III.—An attorney, aged fifty-eight years, arrived at Nauheim July 22, 1910. He used tobacco and alcohol moderately; had always slept well until a short time before, and when first seen was sleeping poorly. His appetite was ravenous, bowels very constipated. In the spring of 1897 he had a severe attack of "la grippe," and was much prostrated. During his convalescence he had a relapse, with an attack of acute Brights' disease, which lasted for several weeks. He had no further trouble until the spring of 1910, when he noticed marked shortness of breath on going upstairs or going up an incline. This became progressively worse. He had an attack of heart failure early in May, 1910, after which he was unable to work or exert himself in anyway. He came to Nauheim to avoid petty annoyances, more fancied than real. His son, who accompanied him, had to watch him closely, as most of the time he was confused. Had to break the journey twice between Antwerp and Nauheim because of fatigue.

Examination showed that the heart was enlarged; the left border extended two inches outside of the midclavicular line, the first sound was about normal, but the aortic second was markedly accentuated. The pulse was irregular, and as nearly as could be

estimated had a rate of 92. The blood pressure averaged 180, with occasional beats up to 190. While at Nauheim the patient was given twenty-six warm, termal baths. Improvement was marked in the character of the pulse, and quality of the heart sounds. The heart diminished in size, until on his departure, the left border of cardiac dullness was just outside of the midclavicular line. In this case the blood pressure did not go below 180. The pulse finally became regular and averaged about 70.

The urine examination on arrival showed albumin, 0.031 per cent., hyaline and granular casts; sugar, 0.52 per cent. One week later the albumin was 0.009 per cent., there were a few hyaline and granular casts, but no sugar. One week later the albumin was down to 0.008 per cent., a few hyaline but no granular casts were present, and sugar was still absent. The last examination made on August 25, 1910, showed only 0.006 per cent. of albumin, a very few hyaline casts, and no sugar.

CASE IV.—A banker, aged sixty-nine years, married, arrived in Nauheim August 2, 1909. He had always been well until 1895, when he had a severe attack of appendicitis; made a slow recovery, and came to Europe where he lived for five years. After this he returned to business and felt able to do more work than usual. In 1907 he noticed some indigestion, and later discomfort after eating. He was examined and found to have a high blood pressure. He spent the winter and spring of 1908 in Egypt and Italy, returned to his home in the United States in April, and felt much better. The following summer he came to Nauheim.

Examination at that time showed his heart to be enlarged, the left border extending about one inch outside of midclavicular line; the first sound weak and the second sound accentuated. He had a slight cold and a good deal of soreness in lower part of his chest, probably due to coughing. He had been having slight nose bleeds. His blood pressure was 190, and his pulse 96. On August 6, at 5.30 A.M., he had such a severe nose bleed that I had to pack the nostril. His blood pressure immediately after this hemorrhage was 160. A little later it went up again to 180. While at Nauheim he was given 25 warm, termal, or brine baths. The blood pressure was gradually reduced to 160.

On his arrival the urine showed a trace of albumin, hyaline and granular casts. The second examination, August 11, 1909, showed a slight increase in albumin, but no granular casts. From this time on, until his departure, albumin and casts were gradually reduced, neither being present when he left Nauheim on September 10, 1909. The heart diminished in size until the left border extended only to the midclavicular line.

I saw this patient again in the spring of 1910. He was feeling decidedly better. There was a very faint trace of albumin in the urine, but no casts were found. He was taking iodide of potassium

on his arrival, and this was continued throughout the treatment, but no other medicines were given.

CASE V.—M. B., aged sixty years. For some years he had been having attacks of dizziness and headaches. He had typhoid fever in 1895, and a bad attack of gout in 1903. A marked eczema had existed for the last twenty years. He used alcohol to excess.

On his arrival in Nauheim, April 28, 1910, the blood pressure was 230 and the pulse 100. While here the patient was given thirty-six termal or plain brine baths. The blood pressure was gradually reduced, until on departure it was 175, with a pulse of 76 to 80. I have had several letters from this patient during the last winter, and he tells me that he has had no fainting attacks and his headaches are not as frequent or severe as formerly.

The urine examination on arrival showed albumin 0.003 per cent., and a few hyaline casts. One month later the urine showed neither albumin nor casts.

CASE VI.—Female, aged sixty years, arrived in Nauheim June 17, 1909. She had always been well except for headaches and neuritis. Three years ago her left arm became very painful and she was unable to move it. This lasted for six months, then gradually began to improve, and since then she has had practically no trouble in this arm. In April, 1908, she had a similar but less severe attack in the right arm, which began to swell and pained her constantly. I treated her in the winter of 1908 and 1909 in America, by baking, etc., and the arm improved. She remained well after that except for an attack of tonsillitis. She was a poor sleeper, had attacks of indigestion, and her bowels were constipated. Repeated examinations made during my treatment of her in America showed faint traces of albumin in the urine.

Her blood pressure on arrival at Nauheim was 128, and her pulse was 72. Her urine still showed a faint trace of albumin. While in Nauheim she was given twenty-two warm, saline baths. After two weeks the urine showed no albumin, she slept well, and was much less nervous.

CASE VII.—Male, aged fifty-three years, arrived in Nauheim May 5, 1909. He used alcohol and tobacco to excess. He had typhoid fever twenty years ago; double pneumonia ten years ago; four years ago he had a light attack of rheumatic fever which kept him in bed for two weeks. For many years he had had attacks of "intercostal rheumatism," and was subject to frequent attacks of bronchitis. For more than a year the patient had been able to sleep only two or three hours a night. In the latter part of March, 1909, while sitting in a chair after dinner, he fell to the floor, was dazed for about a half hour, could not speak, but knew what was going on about him.

After he reached Nauheim a physical examination showed the following: The breathing was short and jerky. The heart was

dilated, the left border extended one inch outside of the midclavicular line, and the right border the same distance to the right of the right edge of the sternum. The first sound was weak, the second aortic accentuated. The blood pressure was 140, and the pulse 96. His doctor sent with him to me six urine examinations that had been made between December 3, 1908, and February 10, 1909, in all of which a trace of albumin was found.

While at Nauheim the patient was given six plain brine baths and twelve termal sprudel baths and four sprudel baths. He left Nauheim on June 8, feeling well, but returned on July 11 and took twelve more baths. Examinations of his urine while there showed traces of albumin. His blood pressure was gradually reduced to 115, and the heart dulness diminished until it was about normal.

During the following winter the patient was much more comfortable, and was able to attend to his businesses, which are varied, and require a great deal of mental effort. He returned again in 1910, at which time there was no albumin in his urine, the blood pressure was 115, and the pulse 74. During his third sojourn in Nauheim the patient was given ten termal baths, ten termal sprudel baths, and four sprudel baths. During this time there was no albumin found in his urine, nor had there been any up to April, 1911, when I last heard from him regarding his urinary condition. He was feeling well, so well in fact that he did not deem it necessary to return to Nauheim last year. He was able to attend to his duties, had had none of the former fainting attacks, nor the shallow breathing. A member of his family recently told me that the patient was looking exceptionally well, and that his immediate family noticed much improvement in him.

CASE VIII.—A manufacturer, aged forty-nine years, married. He had always been well except that he was nervous from overwork and could not sleep. On November 1, 1908, he was thrown from an automobile, received a severe blow on the head and fractured two ribs; he was able to be up and about in two weeks. While travelling, on December 2, 1908, he had a slight stroke, was conscious, but unable to speak. By the end of that month he was able to walk with the aid of a stick. In January, 1909, he was able to go out for drives, and on January 21 was able to go to the seashore, where he remained until early in May, coming to Nauheim in August of that year.

Examination showed that his heart was enlarged, the left border extending about one and one-half inches outside of the midclavicular line; the sounds were apparently normal; his blood pressure was 210, and his pulse 80. While at Nauheim he was given twenty-three warm, termal, or brine baths. The blood pressure was gradually lowered, until it was 162, and his pulse was 64, and the left border of his heart extended to just outside the midclavicular line. On arrival his urine showed albumin and hyaline casts. The cast

disappeared after two weeks, the albumin persisted until the last examination made on September 1, 1909, when neither albumin nor casts were present.

When I saw this patient in January, 1910, he was feeling fairly well. At that time his urine still showed neither albumin nor casts.

The patient returned to Nauheim from America in August, 1910. On landing in Hamburg he had an attack of dizziness, which lasted for a minute or two. He was nervous over this, went to a hospital and rested for a week. On his arrival at Nauheim examination showed that the left border of his heart extended to about the midclavicular line. His blood pressure was 170, and his pulse 68. He was given twenty-six warm, termal baths, to which mother lye was added after the eighth bath. His blood pressure fell to 160, and his pulse averaged 66. On arrival his urine again showed a faint trace of albumin, but no casts. Two weeks later the albumin had entirely disappeared.

CASE IX.—Male, aged fifty-seven years. He had typhoid fever in 1868, and pneumonia in 1902. For thirty years he had been treated for stomach trouble. For the last few years he had had difficulty from "gas pressing on the heart," always relieved by belching, and frequent dizzy attacks, especially in a crowded house, theatre, etc. He had pain in the precordial area, and had been taking nitroglycerin from four to six times a day for two years.

On his arrival at Nauheim, June 17, 1910, I found the blood pressure 170, pulse 70, and very irregular, and the heart enlarged to the left as far as the midclavicular line. The patient was given twenty-eight warm, saline baths, with the result that there was a gradual reduction of blood pressure to 152. Although he took no nitroglycerin during the last two weeks of his stay, he had no pain. I saw the patient in New York early in April, 1911, and he told me that he had not taken nitroglycerin during the entire winter, and had had no pain whatever. I found his blood pressure to be 150 at that time.

Urine examination on his arrival at Nauheim showed 0.006 per cent. of albumin, but no casts. Four weeks later there was a very faint trace of albumin present, and a few hyaline casts were found.

CASE X.—Civil engineer, aged sixty-two years, arrived at Nauheim May 19, 1909. For the sixteen years previous to this he had worked in an office. His stomach had been troubling him for two or three years, and he slept poorly. He had a good deal of headache; his bowels were obstinately constipated, and he was extremely nervous.

Examination showed that the patient was very thin and emaciated; there was marked arteriosclerosis; a small amount of cardiac hypertrophy, and his blood pressure was 180 and his pulse 80. While at Nauheim he was given twenty termal or plain brine baths, and three termal sprudel baths; between meals and at bedtime he

drank one and one-half to two glasses of milk, treated with lactic acid bacilli. His blood pressure was gradually reduced to 155 and his pulse to 70.

I saw this patient about six months after his treatment. He had gained fifteen pounds in weight, and was feeling better in every way. He was able to again attend to his work, and had no headaches.

Urine examination on arrival at Nauheim showed a faint trace of albumin, and a few hyaline casts. Five weeks later, at the time of leaving, the urine showed a very faint trace of albumin and no casts.

From the foregoing cases, and many more that I have treated, in which a probable nephritis was present, I am fully convinced that the Nauheim waters, when used as termal or plain brine baths at about 95° F. (35° C.), are beneficial in cases of Bright's disease, and that in treating cases in which albumin and casts are present the waters must be heated to above the normal temperature of the springs, which for Spring No. 7 is 86.2° F. (29.9° C.); and Spring No. 14, 90° F. (32.2° C.). Spring No. 12 is the only one which could be used at its normal temperature, namely, 94° F. (34.4° C.). I have found that the waters, when supercharged with carbonic acid gas as they come from the springs, are not suitable in such cases. Such water would, therefore, have to lie in storage tanks, to be used as termal or brine baths, and in that case would have to be artificially heated, as some of the temperature would be lost while in storage.

Cases I, VII, and VIII are cases that have been at Nauheim for more than one treatment, and showed a definite improvement in the kidney conditions each time they returned. Their condition at the end of the second year, and in one case the third year, was as good or better than at the end of the first year's treatment. The improvement in these cases seems to be of a permanent character.

Cases II and III are cases which showed a marked improvement while taking the cure—Case II especially, in whom the albumin was reduced from a large amount to a faint trace, and the casts, which were present in large numbers on his arrival, entirely disappeared. Case III had 0.52 per cent. of sugar on the first examination made. While under treatment there were three other examinations made, and in none of these later examinations was any sugar found. I do not know whether sugar had ever been found before, so I am unable to draw any deductions as to this condition.

The blood pressure in all of these and in other cases, was lower after the course of baths. In the cases in which the albumin and casts entirely disappear the reduction in the blood pressure is more marked than in the cases in which the albumin and casts only partially disappear. This would lead me to suspect that in such

cases the high blood pressure is largely caused by the kidney condition.

TABLE SHOWING THE BENEFICIAL EFFECTS OF HOT NAUHEIM BATHS ON ALBUMINURIA AND HIGH BLOOD PRESSURE.

	Date.	Sex.	Age.	C.c. of urine in 24 hrs.	Sp. gr.	Per-cent. of albumin.	Casts.	Blood pressure.	Pulse.
Case I	June 20, 1909	Female	37	1500	1014	0.003	0	160	102
	July 30, 1909			1650	1015.5	Trace	0	152	86
	Aug. 12, 1909			1500	1025.	0	0	130	74
	May 22, 1910	38		1290	1018.	0	0	145	90
	June 6, 1910			1400	1018.5	0	0	140	84
	Aug. 23, 1910			2000	1014.5	0	0	130	74
	July 21, 1911	39		1500	1025.	0	0	135	76
	Aug. 3, 1911			1800	1021.	0	0	130	70
Case II	July 28, 1909	Male	58	1500	1019.	0.014	H. and G., few	160	104
	Aug. 6, 1909			1650	1015.	0.012	H., few	130	80
	Aug. 17, 1909			1650	1013.	0.003	H., very few	130	80
	Aug. 25, 1909			1600	1014.	Trace	0	130	82
Case III	July 23, 1910	Male	58	1900	1019.	0.031	H., many	190	92
	Aug. 1, 1910			1400	1018.	0.009	G., few	180	72
	Aug. 9, 1910			1800	1014.	0.008	H., few	180	68
	Aug. 25, 1910			1950	1010.	0.006	H., very few	150	72
Case IV	Aug. 3, 1909	Male	69	2150	1021.	Trace	H., few	190	96
	Aug. 7, 1909			1050+?	1021.5	0.006	G., few	160	80
	Aug. 21, 1909			1950	1021.	Trace	H., very few	165	80
	Aug. 26, 1909			1500	1020.	Trace	H., very few	180	80
	Sept. 10, 1909			1530	1024.	0	0	180	80
Case V	May 6, 1910	Male	60	1800	1014.	0.003	H., few	230	100
	June 6, 1910			1950	1008.5	0	0	175	78
Case VI	June 18, 1909	Female	60	1700	1015.5	Trace	0	128	72
	July 4, 1909			1800	1015.5	0	0	130	72
Case VII	May 20, 1909	Male	53	1000	1023.	Trace	0	140	96
	July 13, 1909			1100	1023.	0	0	130	78
	July 14, 1910			1500	1021.5	0	0	115	80
	Aug. 3, 1910			1550	1021.	0	0	108	62
Case VIII	July 4, 1909	Male	49	1500	1024.	Trace	H., few	210	80
	Aug. 7, 1909			1650	1024.	Trace	0	170	76
	Aug. 25, 1909			1750	1021.	Trace	0	185	64
	Sept. 1, 1909		50	1800	1014.5	0	0	165	68
	Aug. 8, 1910			1550	1025.	Trace	0	170	64
	Aug. 13, 1910			1800	1014.	Trace	0	160	66
	Aug. 25, 1910			2150	1009.	0	0	162	64
	Sept. 11, 1910			1900	1014.	0	0	160	64
Case IX	June 19, 1910	Male	57	1650	1017.	0.006	0	170	70
	July 13, 1910			1680	1023.	Trace	H., few	152	68
Case X	May 21, 1909	Male	62	1010	1022.	Trace	H., few	150	80
	June 23, 1909			2150	1013.	Faint trace	0	160	20

Just how these baths affect the kidneys is not at this time thoroughly understood. They do cause a relaxation of the entire muscular tissues, as evidenced by the fact that after taking from four to five baths patients are unable to do more than a small percentage of the walking or other exertion of which they were capable before beginning the baths. The baths also relax the per-

ipheral circulation, and this effect may, and possibly does, extend to all tissues of the body. Nauheim baths also cause marked elimination, especially through the skin and kidneys. I have often seen patients who came to Nauheim with a skin almost as dry as a sheet of parchment, after two, three, or four weeks of bathing have an active skin. Indeed, many of these patients remark that they have not perspired for years, even on exertion, but that now, after taking the cure, they perspire easily. This increased elimination through the skin doubtless is no inconsiderable factor in lessening albuminuria and lowering blood pressure.

REVIEWS

BIOLOGICAL ASPECTS OF HUMAN PROBLEMS. By CHRISTIAN A. HERTER, Professor of Pharmacology, Columbia University; Member of Board of Directors (and Physician to the Hospital) of the Rockefeller Institute. Pp. 344. New York: The Macmillan Company, 1911.

THIS book, edited by Susan Dows Herter, from a connected draft not in final form for publication at the time of Dr. Herter's death, represents the interesting and successful attempt of this well-known investigator in, and benefactor of, scientific medicine to set down, for his children, "his interpretation of biological laws in their bearing on human life, in the hope that they may prove of some service to persons who have faith that an understanding of such laws is frequently a help to intelligent and humane conduct."

The biological conception presented is that "human beings are no exception to the rule that all organized beings are in the process of adaptation to their surroundings;" "that all things living are in a state of seething flux, tending to construction or destruction." These tendencies are governed, as the author demonstrates, by quite definite biological laws, which conscious beings may understand and utilize, in order to bring about an intelligent adaptation of the individual to his group of conditions. This rationalistic conception is naturally opposed to the view that religious teachings are the best guide to conduct, and also to the view that each individual has to work out his own salvation by personal experience.

The argument is presented in four "Books" under the general headings: I. The Animal Body as a Mechanism. II. The Self-preservative Instinct. III. The Sex Instinct. IV. The Fundamental Instincts in Their Relation to Human Development. Under the first heading are presented the mechanistic conception of the human body, the problems of growth, reproduction, and inheritance, and a discussion of consciousness and the will. Book II, in four chapters, discusses the instinct of survival, the defences of the body, self-preservation, and the mental life, death, and immortality. Sex instinct is discussed in three chapters devoted respectively to sex and the individual, sex and social relations, and the male and female mind. Book IV presents arts and religion, education and the future of the race, and the fruits of education.

The treatment of these various phases of the subject is a mingling of scientific accuracy and scientific imagination, tinctured by a hopeful idealism of personal and social service which renders the perusal not only pleasing, but stimulating, and suggestive as well of possible concrete social effort. It is shown that the mechanistic view of human life does not lead to the hopeless resignation frequently considered as a necessary outcome of scientific fatalism, but, on the contrary, points the lesson of the great possibilities of developing personality through improved education, the increased opportunities for self-development, friendly surroundings, and mutual social service. In the discussion of "Death and Immortality" the idea is brought out that the cutting off of the prospect of heavenly rewards and hellish punishments "would lead to a greater considerateness in all human relations;" that instead of an obtrusive instinct of self-preservation based on a belief in personal immortality, it would develop a desire for mutual helpfulness, with, if necessary, self-sacrificial efforts, in the behalf, for example, of one's offspring. In the discussion of sex is emphasized the great educational and cultured influence of a higher regard (or affection) between the sexes and of the influence of this on ideals and general conduct of life. The refinement and control of the sex impulse, one of the most significant evidences of advancing civilization, the author associates, apparently in causal relation, with what Western nations regard as an improvement in the status of women. The chapter on "Education and the Future of the Race," with the discussions of the relative importance of "observation, memory, and the welding power of reason" as educational objects, and of education in its relation to the sexually based emotions present much of novelty and much that is of distinct value to parents, educators, and physicians; for that matter, this statement applies to the book as a whole.

The reviewer cannot refrain, though perhaps here he goes out of his way so to do, from an appreciation of Dr. Herter, in connection with this, his last message. The book before us exemplifies his character as a "student of man and of nature," and reminds us of his broad humanity and his devotion to the best ideals of his profession. In his work as physician, neurologist, chemist, and pharmacologist (and in the latter capacity he did much to develop experimental pharmacology in the medical schools of New York City), as a director of the Rockefeller Institute and physician to its hospital, as a consulting expert of the United States Department of Agriculture, as an investigator in his private laboratory, as founder and benefactor of the *Journal of Biological Chemistry*, and, with Mrs. Herter, of lectureships known by his name at the New York University and Johns Hopkins University, he was ever actuated by the ideal of service to American medicine and of the wider recognition of science in medicine. Investigator, bene-

factor, organizer, and advisor in all that pertained to medical service in this country, "a presence to be felt and known," he leaves with us, in the posthumous work here reviewed, ideals of effort and ideals of service, so tinged by a vivid scientific imagination, as to constitute a message destined to profoundly influence the progress of science in the profession he labored so earnestly to aid.

R. M. P.

A HANDBOOK OF PRACTICAL TREATMENT. In three volumes. By 82 Eminent Specialists. Edited by JOHN H. MUSSEY, M.D., Professor of Clinical Medicine, University of Pennsylvania; and A. O. J. KELLY, M.D., late Assistant Professor of Medicine, University of Pennsylvania. Vol. II, pp. 865, 103 illustrations; Vol. III, pp. 1905, 47 illustrations. Philadelphia and London: W. B. Saunders Company, 1912.

IN the September (1911) issue of the *AMERICAN JOURNAL OF THE MEDICAL SCIENCES* (p. 444) appeared a review of Volume I of this System which is completed in Volumes II and III now before us.

The chief aim of this work is to present, in a reasonably small space, a record of the opinions held and the methods employed, in the treatment of disease, by men of recognized authority. These authorities have been chosen from all branches of medicine—thus medicine, surgery, and the specialties, including dentistry, are represented among the eighty-two contributors. Though contained in the space of three volumes, of about 950 pages each, the work may be considered an encyclopedia of the methods of treatment tested and accepted by scientific and authoritative practitioners engaged in the clinical care of the sick. The work is essentially clinical in character, yet the discussions in most instances, deal sufficiently with laboratory investigations to enable the reader to understand the rationale of the measures recommended.

It would be hypercritical for one to compare, in these volumes, the space devoted to therapeutic considerations. Any thought on treatment demands accurate and thorough diagnostic reasoning, and a work which judiciously correlates these will discourage the therapeutic romancer and so be a distinct influence for good.

It is gratifying to note the absence of long discussion, upon drugs and therapeutic measures whose uses are unknown and unsupported by experiment. One finds but few prescriptions and these are, for the most part, composed of drugs whose physiological action is known.

Not only is the treatment considered, but the characteristics of the various diseases are set forth in a manner unusually thorough for such a work; the practitioner, therefore, in considering his treatment thinks in terms of diagnosis, pathology, and prognosis.