

ter and coarse débris are absorbed only through the lymph spaces at the diaphragm, while the fluids are rapidly absorbed by the peritoneum, that there are three cavities of the peritoneum to be drained, viz: the right and left flanks separated from each other by the spinal column and the pelvis separated from the flanks by the psoas muscle. Either flank holds more fluid and is an inch deeper than the pelvis. The body must be elevated to an angle of sixty or seventy degrees to drain properly by Fowler's position. The entire cavity can be drained by gravity by a lateral position."

The surgeon is forced to a thorough study and appreciation of the lymphatic system and the manner that infection travels through the glands. One of the most practical discourses along this line that I ever heard was from a surgeon of note while he was engaged in extirpating a large thyroid in a case of exophthalmic goiter.

In July I witnessed the fifty-second operation for goiter—probably one-half of them of the exophthalmic variety—that a noted surgeon had done since the beginning of the year. It seems that a nicety of discrimination is required as to the amount of thyroid tissue that is left.

There is another line of surgical work—as yet in the experimental stage—which in my opinion is of doubtful utility. It has some attractive as well as novel features. I refer to the transplantation of tissues as well as organs—a line of work now being prosecuted mainly by Garre, Payr and Pankow. A portion of a mother's thyroid has been successfully transplanted to the spleen of her child, and the kidney of a dog implanted into the neck of the same animal, while the renal artery has been united to the carotid, and the renal veins to the innominate veins without disturbing the renal function. Robert T. Morris has recently reported a successful case of ovarian grafting. Strange to say osseous grafts give very gratifying results, and it is not at all improbable that bone grafting will play an important rôle hereafter in the surgery of the extremities.

Page claimed that physical diagnosis is the "mathematics" of medicine, but when one undertakes to define surgery or even to confine it to certain limits there is but little common ground on which to agree. It is a less difficult task to enumerate some of the attributes of a surgeon which may prove germane to the subject. There are a few principles, however, that still hold good in this department, such for instance as: "When in doubt, wait." The wisdom of this can scarcely be questioned when one has not the ready acumen to decide. Another is: "Never operate unless confronted by an actual necessity." I would not take issue with this so long as it relates to major surgery. Minor operations are done every day when a positive necessity does not exist—under circumstances, for instance, as influence the comfort of the patient or for cosmetic effect. Again: "Save every particle of tissue possible." In order to emphasize this principle, Wyeth of New York while examining an injured hand in a clinic, remarked in an exceedingly positive manner: "Surgery does not carry with it the idea 'to lop off' but rather 'to build up.'" The thought struck me then that that is a very happy expression, but recently—since my mind has been engaged in the preparation of this paper—a negro woman came into my office, having traveled in a buggy about twenty-five miles, and volunteered the information that she had a "lump" of some kind as big as her fist that

hung from her privates." I at once thought of procidentia uteri or possibly an extruded uterine polyp, but imagine my surprise on finding an hypertrophied clitoris at least three inches in circumference at its origin, fully six inches long and ending in a bulbous-shaped mass about eight inches in circumference. This entirely concealed the vaginal orifice and shut in its secretions. The meatus urinarius was also beneath the mass. Consequently the odor was extremely disagreeable. As I threw a carbolized gauze around the tumor in order to examine it the better the thought went through my mind like a flash—if Wyeth were here now would he still say: "Surgery does not carry with it the idea 'to lop off'?" It struck me that this thing certainly was sufficiently "built up." And thus it is when one attempts to lay down a rule for another in as broad a field as surgery.

By the most imperative demands the surgeon of late days is forced to make incursions into the field of obstetrics. And when it is wisely, skilfully and successfully done where else can the God-given power of man more pre-eminently manifest itself? I have never yet gained my consent to claim Cesarean section as entirely justifiable in placenta prævia and other anomalous conditions, but there is a rare dystocia in which Cesarean section offers the only avenue of escape for either the mother or the child. I have in mind now an antepartum hour-glass contraction in which a band of fibers, not Bandl's so-called ring, fully an inch in width, as firm as metal, encircled without compressing the child's neck at its juncture with the shoulders. No amount of anesthetic or efforts at manual dilatation would have any effect. Formerly in such cases the woman perished undelivered.

Whereas surgery, like law, was once taught by precedent, now a broader and ever broadening knowledge lifts one above the restrictions that pertain to mere work on gross anatomy, and gives more license—a license that will not be abused by the conscientious man—to the judgment of the individual operator. Surgeons are constantly having comparatively new problems to solve, facing rare conditions, for which there never has been a precedent, and what are they to do when so confronted? In my opinion, the conclusion of the whole matter is that a man of good judgment and discretion, possessing a sensitive conscience and governed by a high sense of moral rectitude, being thoroughly grounded in the present teachings of surgical science, has a right to blaze out a path for himself whenever the occasion arises. After all, in the final analysis, the chief elements in good surgery are simplicity and common sense.

CLINICAL OBSERVATIONS ON BLOOD PRESSURE IN ARTERIOSCLEROSIS AND BRIGHT'S DISEASE

WITH SUGGESTIONS CONCERNING THE THERAPEUTIC CONTROL OF PERSISTENT HIGH BLOOD PRESSURE.*

ARTHUR R. ELLIOTT, M.D.

Professor of Medicine Post-Graduate Medical School and Hospital.
CHICAGO.

The average systolic blood pressure is usually understood to be about 115 mm. of mercury when the estimation is made with a wide arm-band. It is practically impossible to fix an invariable standard for any physiologic phenomenon. In common with other physical processes, such as body temperature, respiration, urine excretion, etc., which are influenced by many conditions of every-

* Read before the Chicago Medical Society, Nov. 28, 1906.

day life, we find the degree of blood pressure likewise affected by a great variety of circumstances producing comparatively wide but transient fluctuations, especially in the direction of increase, so that it is almost impossible to speak of normal values for blood pressure. After making due allowance for these physiologic variations, experience would lead me to place the normal average limits of systolic blood pressure at from 105 mm. to 140 mm. Any persistent elevation above the latter figure may be interpreted as constituting hypertension.

Essential hypertension is a condition, which, if once permanently established and pronounced, becomes a factor of great importance to the welfare of the individual, inasmuch as it entails a lasting increase in circulatory resistance, with consecutive structural changes in the heart wall and degenerative defects in the arteries themselves.

FIRST SERIES.

The reports of blood pressure observations submitted herewith, concern only the variations in systolic blood pressure in certain cases of arteriosclerosis and chronic renal disease which have been under routine observations for considerable although variable periods of time. The blood pressure gauges used were Cook's modification of the Riva Rocci instrument with a 9 cm. arm-band, and the sphygmomanometer of Stanton. As nearly as possible exact conditions were duplicated at each application of the instrument. Physical repose and mental tranquillity were as far as possible secured. The great majority of the observations were taken with the patient in the sitting position; a comparatively few in the recumbent position.

I have had under observation during the past twelve months thirty cases of arteriosclerosis. Without exception these patients have sought relief from some functional or organic manifestation of the disease. Nine had prostatic hypertrophy; one cerebral thrombosis; one retinal hemorrhages; three choroiditis with visual defects; one angina pectoris; and a number have complained of dyspnea, precordial discomfort and cardiac irregularity.

In this series the average age was sixty-one years, and the average maximum systolic blood pressure 148 mm. In fourteen of the cases (47 per cent.) the blood pressure fell within the normal range. Sixteen cases (53 per cent.) displayed a systolic pressure persistently above the normal limit. Only six of the entire series (20 per cent.) showed a blood pressure which could be called significant—a positive hypertension. In brief, these six cases are as follows:

CASE 1.—Male, aged 81, has "pipe-stem" arteries; dyspnea; chronic cough; cardiac hypertrophy, and a harsh basic systolic murmur. The blood pressure was invariably above 200 mm., and on one occasion 225 mm. The urine was rather scant and concentrated, and contained degenerative tube casts and albumin. I am not at all sure that the renal condition is not the cause of this man's hypertension.

CASE 2.—Male, aged 76; colored; spare individual; preacher; marked calcification of all superficial arteries. There is great dyspnea and slight malleolar edema. Urine has a few casts; no albumin; maximum systolic pressure observed, 175 mm.

CASE 3.—Male, aged 41; spare; no syphilis; has attacks of anginoid character. General fibrosis of palpable arteries, with indications of aortic atheroma. Casts present; no albumin; maximum systolic blood pressure, 175 mm.

CASE 4.—Female, aged 79; nodular arteries; double senile cataract; chronic bronchitis; harsh basic cardiac murmur. Urine normal, except for casts. Blood pressure 176 mm.

CASE 5.—Male, aged 77; prostatic hypertrophy; harsh basal

systolic murmur; clanging aortic second sound; cardiac hypertrophy; no albuminuria; blood pressure 170 mm.

CASE 6.—Male, aged 53; weight 131 pounds; syphilitic; fibrotic tortuous arteries; cardiac enlargement; basal systolic murmur; very reverberant second aortic sound; aortic dilatation; very dyspneic; no albuminuria; systolic blood pressure 200 mm.

The number of cases of arteriosclerosis included in the foregoing observations is not large, but the series has the distinct advantage of being made up of typical cases, each individual coming under treatment for some manifestation of arterial disease. A point of interest brought out by this investigation is the comparatively high percentage of cases (47 per cent.) of arteriosclerosis, in which the blood pressure was below 140 mm., a normal limit which certainly can not be called excessive for a group of individuals averaging sixty-one years of age. This result is confirmatory of the observations of Carter, Potain, Groedel, Dreschfeld and others. It would appear that thickening and hardening of the superficial arteries on which we base the clinical diagnosis of arteriosclerosis does not constitute sufficient cause for development of high blood pressure. We are not to conclude because the radial, temporal and other palpable arteries are sclerosed that high tension necessarily exists. The sphygmomanometer is absolutely essential to clearing up this important point, and it should be invariably employed as a means of diagnosis in every case of arterial disease. It is practically impossible for the unaided finger, no matter how skilled the observer may be in pulse reading, to determine with accuracy how much of the hardness and firmness of an artery is produced by high pressure of the blood within the vessel, and how much is due to thickening of the arterial wall.

The paradoxical absence of cardiac hypertrophy in certain cases of well-marked and even advanced arteriosclerosis, is explained now that we realize that the essential element of high blood pressure may not be present in any given case, and that the degree of sclerosis of the superficial arteries is no reliable criterion, either of the severity of alterations in visceral blood vessels, or of the degree of tension present. It is clear that some underlying factor not accessible to our present methods of investigation must be responsible for the occurrence of high blood pressure in arteriosclerosis. What this determining cause is, we are not yet sufficiently advanced in the knowledge of our subject to say with certainty, although the researches of Hasenfeld and of Hirsch supply an interesting and probably correct explanation. The contention of these authorities, strengthened by clinical and pathologic proofs, is that it is only when the vessels of the splanchnic area or of the aorta above the diaphragm are diseased that high blood pressure and cardiac hypertrophy develop in arteriosclerosis. Degeneration of the peripheral vessels alone does not appear to exert this influence. After all, this is no more than we might expect if we bear in mind the all-important regulatory position which the abdominal circulation bears to general systemic blood pressure. It is interesting to note in connection with the foregoing that each one of the six cases of my series that displayed positive hypertension (170 mm. or over) yielded the physical signs of atheroma of the aorta.

It is hardly necessary to urge the importance of carefully excluding chronic nephritis in every case of arteriosclerosis with hypertension. The frequency with which chronic renal disease is associated with cardiovascular changes is well known, and no factor is so potent as nephritis in the causation of high blood pressure. If a diagnosis of chronic interstitial nephritis can be made, it is

not necessary to search further for the cause of high pressure. At the same time, it is to be remembered that greater care than ordinary is required to diagnose nephritis in cases of arteriosclerosis, owing to the fact that some degree of renal atrophy is almost always present as a consequence of the kidneys sharing in the general vascular deterioration. Casts are deprived of their diagnostic value since they are almost invariably present in the urine of the sclerotic individual. The presence of albumin and the quantitative urinary findings are of much greater value.

So far as I am aware, there exists no absolute clinical indication that will serve as a means of identifying cases of splanchnic sclerosis. Fraenkel and Hasenfeld have pointed out that corpulent persons of a sedentary mode of life are especially prone to the development of sclerosis in the abdominal vessels, thin individuals being less liable to excessive blood pressure. This observation seems to be borne out by clinical experience, yet it is manifestly impossible to establish corpulency and physical indolence as reliable criteria of the local distribution of retrograde vascular changes. Ophthalmoscopic examination may be of service by enabling us to detect changes in the retinal vessels in cases where the superficial arteries are free from gross indications of the disease, and resort should be had to this aid to diagnosis in all doubtful cases.

When the aorta above the diaphragm is seriously involved, the diagnosis is, as a rule, much easier. Alterations of the basal systolic heart sound and a clanging, reverberant quality to the second sound in the aortic area, will frequently be revealed by careful auscultation.

It is altogether likely that those rare and puzzling cases of cardiovascular disease with hypertension without commensurate involvement of the kidneys that come under observation may prove to be instances of splanchnic arteriosclerosis. In concluding this brief consideration of arteriosclerosis we may be justified in drawing the following empirical deductions from the information in hand.

DEDUCTIONS.

1. The ordinary clinical type of arteriosclerosis is not necessarily accompanied by high blood pressure, a large percentage failing to show this development.
2. When high blood pressure is met with in arteriosclerosis it points to the existence either of associated renal disease or sclerosis of the splanchnic vessels and of the aorta above the diaphragm—one or both.
3. If we are able to exclude chronic interstitial nephritis in such a case, splanchnic or aortic sclerosis is to be suspected.

SECOND SERIES.

The second series of observations that I wish to report comprises sixty cases of chronic Bright's disease. Only a résumé of the maximum records will be given, the full detail being reserved for a future communication.

Number of cases investigated, 60—male, 34; female, 26.

Average age, 51 years.

Average weight, 160 pounds.

Average maximum systolic blood pressure, 190 mm.

Average minimum systolic blood pressure, 165 mm.

Maximum systolic blood pressure recorded in any case, 285 mm.

Minimum systolic blood pressure recorded in any case, 110 mm.

The high average pressure in this series constitutes a marked contrast to the average recorded in the preceding group of arteriosclerosis, being 190 mm. in nephritis, against 148 mm. in arteriosclerosis. This furnishes

proof, if proof were needed, of the almost essential position which renal disease occupies in the causation and maintenance of morbid hypertension. The permanent character of this symptom in chronic nephritis, and the extreme difficulty of influencing it by treatment, is indicated by the high minimum systolic pressure recorded in this series (165 mm.), despite a systematic effort to reduce it in almost every case by diet, hygiene and other therapeutic measures.

An interesting outcome of my study of these cases is the evidence forthcoming as to the relation existing between albuminuria and high blood pressure.

1. Number of cases without demonstrable albuminuria, 8. Average maximum systolic pressure in these cases, 200 mm.

2. Number of cases in which the albuminuria amounted to a trace only—too minute for accurate volumetric estimation, 29. Average maximum systolic pressure in these cases, 180 mm.

3. Number of cases in which albumin was present in the urine in appreciable amount, 21. Average maximum systolic blood pressure in these cases, 197 mm.

Average amount of albumin in volumetric p. c., 3.76 per cent.

Judging from these records it would appear that no constant ratio exists between the degree of blood pressure and the intensity of the albuminuria. In the foregoing series the highest average blood pressure was noted in cases without albuminuria.

Another point of interest to determine is the relationship between the quantity of urine excreted and the degree of blood pressure. Thirty-one cases were carefully observed in this regard, the urine being collected and measured in a routine way.

Average maximum blood pressure in these cases, 180 mm. Average daily excretion of urine, 1,554 cc.

From this it would appear that high pressure is not necessarily attended by a marked increase in urine outflow. Some detail of this observation is of sufficient interest to detain us a moment. Thus, in a case with a pressure of 285 mm., the urine equaled only 1,000 c.c.; another with a pressure of 265 mm. had a urine of 720 c.c. of urine. On the other hand, a blood pressure of 255 mm. with 1,280 c.c. of urine; one of 270 mm. with 1,000 c.c. of urine. On the other hand, a blood pressure of 255 mm. has coincided with a polyuria of 5,740 c.c.; one of 210 mm. with 2,400 c.c. of urine; one of 140 mm. with 2,400 c.c. of urine, etc. No fixed relation between arterial pressure and renal activity would appear from these statistics.

Chronic Bright's disease is essentially a disease of systemic scope involving the arteries, and the heart as well as the kidneys. Arterial hypertension is one of its salient features, a fact long known and now strikingly demonstrated by blood pressure readings with instruments of precision. A systolic blood pressure of over 200 mm. is exceedingly common, and cases have been reported where it has attained the extreme degree of 300 mm. The highest record I have observed using a 9 cm. arm-band was 285 mm., in a young woman with enormous cardiac hypertrophy, who died shortly after of circulatory failure and uremia. Other high systolic pressures in my records in different cases are 270 mm., 265 mm., 260 mm., 255 mm., and 235 mm. Twenty-six of the series of sixty cases displayed systolic pressures of 200 mm. and over.

Cases do occur, however, which are not accompanied by hypertension. Eight instances of this character are included in my series, two of these being cases of secondary low blood pressure, where the heart had become dilated and was unable to sustain the circulatory load.

Notwithstanding these occasional exceptions, high blood pressure is so frequent and significant an accompaniment of contracted kidney that it constitutes one of the most valuable diagnostic indications of this disease. Urinary criteria are often obscure or may fail entirely, as we have been made aware by the researches of Emerson, Cabot and others. If the sphygmomanometer is used as a routine procedure in diagnosis, high blood pressures can not escape detection, and will put the observer on the alert. A systolic pressure of 200 mm. or thereabouts points with so clear a significance to the kidneys as to reduce to a minimum the possibility of these cases escaping proper interpretation.

THERAPEUTIC CONTROL.

It now remains, in fulfilling the title of my paper, to discuss the question of the proper management of high pressure cases. In inviting your attention to this aspect of the subject, I have a specific purpose in view, viz., the consideration of the limitations of drug therapy in the control of hypertension. I regard it as important to raise this question at the present time, owing to the increasing tendency to the use and I believe the unwise use of vasodilators in Bright's disease and other high tension disorders. In order to obtain a clearer view of the subject, a brief resumé of the clinical facts of the situation will be of service. All high blood pressure conditions are essentially characterized by the element of systemic toxemia; indeed, high blood pressure is primarily no more than a vascular reaction against the presence of toxins in the circulating blood. In Bright's disease this vascular reaction is perpetuated by the continuous character of the toxemia, and is subsequently enhanced by the uremia which results from advancing renal inadequacy. This chronic vaso-constriction leads to fibrosis of the arterial walls and impairment of their elasticity, so that the work of the heart is increased and the organ hypertrophies. Tracing the matter to its termination, we find that the permanent and progressive character of the peripheral obstruction and the limited possibilities of the heart for adjustment ultimately lead to cardiac failure; the ventricles dilate and the support of the circulation being thus impaired, secondary low pressure becomes substituted for primary high blood pressure. Progressive cardiac failure is, in theory at least, inevitably in store for every such case of cardio-renal disease.

A very different aspect is revealed if we regard the matter from the physiologic standpoint. That the extensive structural involvement and functional crippling of the kidneys must necessarily be attended with enlarged powers of circulation is obvious, since diminished powers of excretion can be compensated for only by increase in the force of the blood current in the glomerular vessels. When we consider that the energy of the heart's contraction is mainly expended in overcoming the resistance presented by the arterial blood pressure, we can easily see why, in high tension cases, the heart hypertrophies. The entire cardiovascular sequence may be regarded as a reaction of the organism against morbid influences, and as such may be looked on, within certain limits, as conservative and compensatory.

Clinical emphasis of this fact is furnished by the greater comfort and activity enjoyed by the nephritic with high tension and cardiac hypertrophy than his less fortunate brother with whom such compensation through some inherent fault of vitality fails to become established. A still more striking contrast is constituted by the misery of the stage of secondary low tension as compared with the comparative vigor and good functional

health of the period of high tension. After observing so impressive a transition one almost feels inclined to endorse the statement of Broadbent, that "it is not high tension but low tension that is to be feared in Bright's disease." Notwithstanding the truth of such an assertion in the ultimate sense, a doubt of its entire validity is forced on one by the realization that most of the functional disturbances and pains of Bright's disease arise in consequence of high tension. To this factor also may be traced most of the fatal developments which complicate its course, such as apoplexy, angina pectoris, and the dreaded terminal heart failure. A consideration of all the clinical facts must, it seems to me, impress the observer with a due sense of the value of high blood pressure to the renal invalid, yet modified with a large reservation of doubt engendered by the capacity of this element to work the ultimate undoing of the patient.

High blood pressure is a friend to the nephritic patient, but one that needs careful watching, otherwise it may betray him into many a pitfall. This is exactly the attitude, in my judgment, in which we should approach the problem of the therapeutic regulation of blood pressure. We should be watchful rather than officious. It is to be remembered that high blood pressure is a compound of two conditions, viz., increased peripheral resistance and augmented propulsive power of the heart, the former existing as a reaction against toxemia, and the latter as a response to increased work. It is self-evident that the therapeutic control of the condition must first concern itself with reducing as far as possible the systemic toxemia present. The *indicatio-causalis* is disintoxication. Regulation of the diet, the fluid intake, the personal hygiene in all its details and stimulating, to a reasonable activity, all the accessory organs of elimination, must constitute the basis of the therapeutic regulation of high blood pressure in Bright's disease, and other disorders characterized by high tension. The details of these various procedures have been frequently and fully elaborated by eminent authorities and I confess myself unable to add anything of importance.

The temptation to employ active vascular medication when the sphygmomanometer has demonstrated a high blood pressure is great, and the question as to when and to what extent we are justified in resorting to such artificial means of lowering high tension is a difficult subject on which to dogmatize. I therefore submit the following propositions, with a due sense of their inadequacy, not as absolute rules to be followed in all cases, but as tentative suggestions for the medicinal treatment of hypertension as the outcome of my own experience:

SUMMARY.

1. Before proceeding with the exhibition of vascular drugs, the heart and circulation should be examined with the utmost care. The points of importance to be noted are the character of the heart tones, the relative degrees of hypertrophy and dilatation, the existence of gallop-rhythm, the pulse rate in both the upright and recumbent positions, and after activity. Both the systolic and diastolic blood pressures should be carefully estimated in the recumbent and the upright positions, and the degree of postural variation carefully noted, in order to determine a want of vigor in the ventricle. A rapid, irregular or intermittent pulse, the presence of gallop rhythm, a mitral systolic bruit, inverse pulse and pressure record, all point to cardiac inadequacy in face of the high blood pressure, and may serve as indications for cardiac stimulation in place of, or in conjunction with, vaso-dilatation. Because the blood pressure is high, it does not

necessarily follow that vascular relaxants are indicated; it may be that cardiac tonics are more urgently needed.

2. Excessive blood pressure of itself does not constitute an absolute indication for drug treatment, nor does it serve as reliable ground for a bad prognosis. It is remarkable how well Nature accustoms herself to severe circulatory resistance, so that cardiac integrity is maintained and symptoms remain absent for long periods, with pressures of 200 mm., and even much higher. The writer has patients at present under observation whose blood pressure, covering a period of two and three years, has seldom been below 200 mm., yet they have enjoyed a good measure of activity and freedom from symptoms. One individual whose blood pressure has ranged from 200 mm. to 265 mm. for one year has remained practically free from symptoms. It is well to accent the point that because the blood pressure is high it does not necessarily follow that it must be reduced by drugs in order to insure either the patient's safety or comfort.

3. Active vasodilators (nitrites) may occasionally be necessary to meet emergencies, such as stenocardia, angina pectoris, apoplexy prodromes, etc.; under such circumstances they are perfectly justifiable and may be given with a freedom not at other times permissible.

4. Blood pressure may be reduced temporarily by vasodilator drugs, but it is very difficult to produce a permanent lowering except in the presence of a weak heart. This is easily understood when we remember that vascular pressure is a compound of ventricular propulsion and peripheral resistance. If you modify the latter in the presence of a strongly acting ventricle, the pressure will be maintained by the heart. Modify the peripheral resistance in the presence of a weak ventricle and the blood pressure will fall with a simultaneous increase in the pulse rate, due to inadequate efforts on the part of the heart to maintain pressure. It follows, therefore, that a material fall in blood pressure which is more than temporary, due directly to vasodilators, especially if accompanied by quickened pulse rhythm and not marked by improvement in the patient's sense of well-being, is apt to be unfavorable, being ominous of a weak heart.

5. A sustained high blood pressure (over 200 mm.), if accompanied by symptoms of disquieting character, may render a course of vasodilator medication advisable. The drug chosen should be slowly and cautiously introduced, closely watching its effects on blood pressure, pulse rate and subjective state of the patient. The sudden employment of full doses of an active vasodilator is to be condemned, as it may produce serious consequences to the patient's heart and nervous system. A fall of 10 to 15 per cent. is, as a rule, all that is necessary or judicious to accomplish by drugs.

6. The benefit derived from vasodilator medication can not be properly gauged by the blood pressure record. The patient's subjective comfort and more especially the pulse rate form a better index of the effect produced. The most favorable influence in my experience has been in cases where no manifest fall in blood pressure has resulted, but subjective disturbances have disappeared, and the pulse has diminished in frequency. I should say as the result of personal observation that the case which above all others will be best influenced by vasodilators is one in which the blood pressure is high (over 200 mm.), and in which no direct response to the drug in the pressure record is apparent, but merely the indirect response in pulse rate and bodily comfort, as above noted.

7. The employment of vasodilators in the late stages of Bright's disease with cardiac dilatation, dropsy, etc.,

is practically useless, and were it not for the fact that the vasomotor control of the peripheral circulation is too much disturbed to respond, they might do harm. The fact that the case was primarily one of high tension forms no excuse for continued reliance on these drugs under such circumstances.

103 State Street.

GONOCOCCUS-CONJUNCTIVITIS IN ADULTS AND INFANTS.

A REVIEW OF TREATMENT AND RESULTS IN ONE HUNDRED AND TWENTY-NINE CASES IN THE PHILADELPHIA GENERAL HOSPITAL DURING THE PAST SIX YEARS.*

T. B. HOLLOWAY, M.D.

Instructor in Ophthalmology, University of Pennsylvania, Registrar Ophthalmic Wards, Philadelphia General Hospital.
PHILADELPHIA.

The study of the following 129 cases of gonococcus infection of the conjunctiva, occurring in the services of Drs. G. E. de Schweinitz, C. A. Oliver, H. F. Hansell and J. W. Croskey in the Philadelphia General Hospital, covers a period extending from May, 1900, to July, 1906.

For a convenience and for more accurate study such a series would naturally divide itself into two groups:

1. Those in which the infection occurred subsequent to labor, or gonococcus-conjunctivitis.

2. Those in which the infection could be traced directly to birth, or conjunctivitis neonatorum.

In using the term gonococcus-conjunctivitis in preference to gonorrhea, I follow the suggestion of Holt, because it eliminates a factor which is wholly lacking in many of these cases. Of the 129 cases that came under observation, 72 cases could be included under Group 1, or gonococcus-conjunctivitis, and 57 under Group 2, or conjunctivitis neonatorum. Of these 72 cases of the former involving 106 eyes, 54 cases occurred in adults, 44 of which were males and 10 females, while the remaining 18 cases were among children and only 4 of these were of the male sex. The cause of this apparent influence of age on the frequency of this affection in the two sexes is obvious and will be referred to indirectly later on.

Among the adults there was a bilateral involvement in 19 cases and a unilateral involvement in 35 cases and, strangely enough, in the latter series the left eye was involved twice as often as the right, the actual numbers being 23 and 12. Among the children 15 cases were bilateral and 13 unilateral.

GROUP I, OR GONOCOCCUS-CONJUNCTIVITIS.

Positive reports of bacteriologic examinations were obtained in 48 cases, and, while in the remaining 24 no record of such an examination could be found, 16 of them had associated gonorrhea, which leaves but 8 partly unaccounted for. Of these a history of accidental infection from probably contaminated eyes was obtained in the cases of 2 female children and 1 female adult; one male adult had had two previous attacks of gonorrhea the last 6 months before his eye became involved, but stated he had no urethral discharge at the time; another male adult denied gonorrhea, but there was no record of an examination. In the remaining cases, two male adults and one male child, no data of any kind were recorded. It should be stated that over half of the rec-

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