Ranney (A. L.)

Compliments of the Author.

INTERNAL URETHROTOMY:

ARE THE BENEFITS TO BE DERIVED FROM IT, AS NOW ADVOCATED FOR THE RELIEF OF STRICTURE, COMMENSURATE WITH ITS DANGERS?

BY

AMBROSE L. RANNEY, M. D.,

ADJUNCT PROFESSOR OF ANATOMY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK.

[*REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, AUGUST AND SEPTEMBER*, 1880.]

NEW YORK:
D. APPLETON AND COMPANY,
1, 3, AND 5 BOND STREET.
1880.

INTERNATIONAL SCIENTIFIC SERIES.

NOW READY. In 12mo and bound in cloth.

No. 1. **FORMS OF WATER,** in Clouds, Rain, Rivers, Ice, and Glaciers. By Prof. JOHN TYNDALL. $1.50.

" 2. **PHYSICS AND POLITICS;** or, Thoughts on the Application of the Principles of "Natural Selection" and "Inheritance" to Political Society. By WALTER BAGEHOT. $1.50.

" 3. **FOODS.** By EDWARD SMITH, M. D., LL. B., F. R. S. $1.75.

" 4. **MIND AND BODY.** By ALEXANDER BAIN, LL. D. $1.50.

" 5. **THE STUDY OF SOCIOLOGY.** By HERBERT SPENCER. $1.50.

" 6. **THE NEW CHEMISTRY.** By Prof. JOSIAH P. COOKE, Jr., of Harvard University. $2.00.

" 7. **THE CONSERVATION OF ENERGY.** By Prof. BALFOUR STEWART, LL. D., F. R. S. $1.50.

" 8. **ANIMAL LOCOMOTION;** or, Walking, Swimming, and Flying, with a Dissertation on Aëronautics. By J. BELL PETTIGREW, M. D. Illustrated. $1.75.

" 9. **RESPONSIBILITY IN MENTAL DISEASE.** By HENRY MAUDSLEY, M. D. $1.50.

" 10. **THE SCIENCE OF LAW.** By Prof. SHELDON AMOS. $1.75.

" 11. **ANIMAL MECHANISM.** A Treatise on Terrestrial and Aërial Locomotion. By E. J. MAREY. 117 Illustrations. $1.75.

" 12. **THE HISTORY OF THE CONFLICT BETWEEN RELIGION AND SCIENCE.** By JOHN WILLIAM DRAPER, M. D., LL. D. $1.75.

13. **THE DOCTRINE OF DESCENT, AND DARWINISM.** By Prof. OSCAR SCHMIDT, of Strasburg University. $1.50.

" 14. **THE CHEMISTRY OF LIGHT AND PHOTOGRAPHY.** By Dr. HERMANN VOGEL. 100 Illustrations. $2.00.

" 15. **FUNGI;** their Nature, Influence, and Uses. By M. C. COOKE, LL. D. Edited by M. J. BERKELEY. 109 Illustrations. $1.50.

" 16. **THE LIFE AND GROWTH OF LANGUAGE.** By Prof. W. D. WHITNEY, of Yale College. $1.50.

" 17. **MONEY AND THE MECHANISM OF EXCHANGE.** By W. STANLEY JEVONS, M. A., F. R. S. $1.75.

" 18. **THE NATURE OF LIGHT,** with an Account of Physical Optics. By Dr. EUGENE LOMMEL, Professor of Physics in the University of Erlangen. 88 Illustrations and a Plate of Spectra in Chromo-lithography. $2.00.

" 19. **ANIMAL PARASITES AND MESSMATES.** By M. VAN BENEDEN, Professor of the University of Louvain. 83 Illustrations. $1.50.

" 20. **ON FERMENTATIONS.** By P. SCHÜTZENBERGER, Director of the Chemical Laboratory at the Sorbonne. 28 Illustrations. $1.50.

" 21. **THE FIVE SENSES OF MAN.** By JULIUS BERNSTEIN, O. Ö. Professor of Physiology in the University of Halle. 91 Illustrations. $1.75.

" 22. **THE THEORY OF SOUND IN ITS RELATION TO MUSIC.** By Prof. PIETRO BLASERNA, of the Royal University of Rome. Numerous Woodcuts. $1.50.

" 23. **STUDIES IN SPECTRUM ANALYSIS.** By J. NORMAN LOCKYER. Illustrations. $2.50.

" 24. **A HISTORY OF THE GROWTH OF THE STEAM-ENGINE.** By ROBERT H. THURSTON, A. M., C. E., Professor of Mechanical Engineering. 163 Illustrations. $2.50.

" 25. **EDUCATION AS A SCIENCE.** By ALEXANDER BAIN, LL. D., Professor of Logic in the University of Aberdeen. $1.75.

" 26. **MODERN CHROMATICS,** with Applications to Art and Industry. By OGDEN N. ROOD, Professor of Physics in Columbia College. 130 original Illustrations. $2.00.

" 27. **THE HUMAN SPECIES.** By A. DE QUATREFAGES, Professor of Anthropology in the Museum of Natural History, Paris. $2.00.

" 28. **THE CRAYFISH:** An Introduction to the Study of Zoölogy. By Prof. T. H. HUXLEY. 82 Illustrations. $1.75.

The INTERNATIONAL SCIENTIFIC SERIES is entirely an American project, and was originated and organized by Dr. E. L. Youmans, who spent the greater part of a year in Europe, arranging with authors and publishers.

The character and scope of this series will be best indicated by a reference to the names and subjects included in the list of volumes published and in preparation; from which it will be seen that the cooperation of the most distinguished professors in England, Germany, France, and the United States, has been secured.

The works will be issued simultaneously in New York, London, Paris, Leipsic, Milan, and St. Petersburg.

VOLUMES IN PREPARATION.

The Brain as an Organ of Mind. By H. CHARLTON BASTIAN, M. D. *(In press.)*

The Stars. By Prof. SECCHI, late Director of the Observatory at Rome. *(In press.)*

The Sun. By Prof. YOUNG, of Princeton College. With numerous Illustrations.

Forms of Life and other Cosmical Conditions. By P. BERT, Professor of Physiology, Paris.

General Physiology of Muscles and Nerves. By Prof. J. ROSENTHAL, of the University of Erlangen.

Animal Intelligence. By GEORGE J. ROMANES, F. L. S.

On Ants and Bees. By Sir JOHN LUBBOCK, Bart., F. R. S.

Psychometry. By FRANCIS GALTON, F. R. S.

D. APPLETON & CO., Publishers, 1, 3, & 5 Bond St., New York.

INTERNAL URETHROTOMY:

ARE THE BENEFITS TO BE DERIVED FROM IT, AS NOW ADVOCATED FOR THE RELIEF OF STRICTURE, COMMENSURATE WITH ITS DANGERS?

BY

AMBROSE L. RANNEY, M. D.,

ADJUNCT PROFESSOR OF ANATOMY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK.

[*REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, AUGUST AND SEPTEMBER*, 1880.]

NEW YORK:
D. APPLETON AND COMPANY,
1, 3, AND 5 BOND STREET.
1880.

ARE THE BENEFITS TO BE DERIVED FROM INTERNAL URETHROTOMY, AS NOW ADVOCATED FOR THE RELIEF OF STRICTURE, COMMENSURATE WITH ITS DANGERS?*

Within the last few years the operation of internal urethrotomy has, in the opinion of many prominent conservative surgeons, acquired an undue popularity. Despite the brilliant claims urged in its favor (and, if all that is claimed can be verified, they certainly are brilliant), and despite the long lists of patients who have been induced to undergo the operation (and the details of many have been published), the more conservative authors, to whose judicious decisions too much weight can not be given, since they must always act as guides to the young and often to the old practitioner, fail, as yet, even in their latest works, to support or justify the operation, save in exceptional cases, whose alarming growth may well excite dismay. It seems to me that the time has come when the profession, who are too apt to leave what is old and well-proven for that which is novel and not proven, should review

* Read before the New York Academy of Medicine.

the grounds upon which internal urethrotomy has become popular, the evils which it aims to cure, and the dangers which accompany it; and that they should also accord due weight to the opinions of men whose views are entitled to consideration, before accepting unconditionally a means of supposed relief, which is attractive from its rapidity and ease of execution, but which is not always successful, and, in some cases, not without danger.

Internal urethrotomy is not a new operation. From the time of Paré, cutting instruments have been described, and modifications of these primitive appliances have, from time to time, sprung into existence, each presenting some exceedingly slight difference from its predecessor, in accordance with the taste and fancy of its advocate. The only essential point of difference between them allows, however, of their general classification into two kinds of instruments, viz., those which divide the urethral wall freely, and those which do not injure it severely.

It is not necessary to discuss here the relative merits of incisions from before backward or from behind forward, as a special aim of some instrument; nor to touch upon the fact that, by a previous *stretching process* before the incision is made, the certainty of division is made doubly sure. It is not the aim of this paper to discuss what is the best instrument for dividing a stricture, but to question the propriety of division, except under such circumstances as, in the general opinion of the best recognized authors, constitute a justifiable indication for the operation.

Sir Henry Thompson,* in reviewing the efforts of Reybard, in 1855, to popularize incisions within the urethra, says: "If the stricture be so confirmed that it will not yield to dilatation when carefully applied, a slight notch will not facilitate its disappearance; and an extended section of the urethra, if required to effect that which other means have failed to accomplish, permits the occurrence of internal hæmorrhage and urinal infiltration, since the wound has no external outlet; a risk which we are not justified in encountering."

* "Brit. and For. Med.-Chir. Review," October, 1855.

Professor S. D. Gross says: * "All the methods of treatment by incision, however carefully or judiciously conducted, are liable to be followed by serious or even fatal consequences."

Professor F. J. Gant † states in his last work: "I very rarely find it necessary to have recourse to internal section of the urethra."

Professor John Ashhurst ‡ says in his late treatise: "Urethral fever is not an infrequent sequel of operations upon the urethra"; and again: "Gradual dilatation is by far the best mode of treating stricture in any instance where it is applicable."

Mr. John E. Erichsen § says: "Gradual dilatation is certainly the most successful mode of treating ordinary strictures of the urethra. Internal urethrotomy is not free from danger. The so-called 'urethral fever,' if fatal, reveals one of two conditions, viz., pyæmia or acute interstitial nephritis. It rarely becomes necessary for a surgeon who combines patience and skill to have recourse to those more severe methods of treatment which have been unduly extolled and too often practiced of late years."

Mr. T. Holmes, ‖ recognizing the danger of urethral fever, discusses its possible prevention by alcohol and laudanum.

Mr. James Spence, ¶ of Scotland, says: "Internal incision of strictures of the urethra has again become fashionable, and greatly to my regret. I can conceive no method more uncertain and dangerous. In any form of division from within the canal, the risks of bleeding and infiltration of the urine into the spongy texture of the organ must be very great, as there is no external wound."

In the "System of Surgery," edited by T. Holmes, Vol. IV, p. 972, Sir Henry Thompson again says, speaking of internal urethrotomy: "No one who is experienced in the

* "System of Surgery," Philadelphia, 1872, p. 823.

† "Science and Art of Surgery," Philadelphia, 1878, p. 777.

‡ "Principles and Practice of Surgery," Philadelphia, 1878, pp. 921, 923.

§ "Science and Art of Surgery," Philadelphia, 1878, pp. 855, 856, 719, 869.

‖ "Treatise on Surgery," Philadelphia, 1876, p. 795.

¶ "Lectures on Surgery," Edinburgh, 1876, p. 1072.

surgery of the urinary organs can question that unfortunate events must sometimes happen."

Sir William Fergusson * makes the following statements: "Like all cutting operations, internal urethrotomy is not devoid of danger. Deaths have been recorded, besides evils from shock, hæmorrhage, and other annoyances. I can positively state, from my own personal observation, that it is *not always followed by entire relief* from after annoyances, as we have been led to expect."†

It may be offered as an objection to the statements of authorities such as these, that writers upon general operative surgery are forced, by the responsibilities of their position as authors, to err on the side of conservatism; and that those who have more exhaustively studied the special department of urethral diseases would be our best guides in deciding the question. Let us see, therefore, how the statements of such authors compare with some of those previously quoted.

In the last edition of Dr. Bumstead's work, edited by Dr. R. W. Taylor,‡ the following passages may be found: "Hæmorrhage is not infrequently an unpleasant accident following operations upon stricture. Internal urethrotomy is not free from the danger of hæmorrhage for *ten days* after the operation. *Curvature of the penis* is met with in many instances following internal urethrotomy of the penile urethra. It may exist to such an extent as to *impair or entirely prevent sexual intercourse.* The multiplicity of means devised to arrest hæmorrhage is suggestive of the liability of its occurrence." § "If I had only a 'stricture of large caliber,' presenting no obstruction to the urine and occasioning no inconvenience, no argument drawn from possible ills in the future could persuade me to be subjected to the knife, and *what a surgeon would not have done to himself he has no right to recommend to others.*'"

In reviewing this work from which we have just quoted,

* "System of Practical Surgery," London, 1870, p. 702.

† The italics are my own.

‡ "Pathology and Treatment of Venereal Diseases," Philadelphia, 1879, p. 318.

§ The italics are my own.

"The New York Medical Journal" of February, 1880, says: "It is to be hoped that the following words [those above quoted] will sink into the hearts of those callow young men who are itching to introduce a urethrotome into every urethra whose owner is so unlucky as to fall into their hands."

Sir Henry Thompson, although in a work published in 1854,* states that "dilatation is the most desirable treatment to employ, whenever the case will admit of it"; and he has not as yet receded from this view.

Professor Samuel D. Gross, in a work renowned for its scholarly compilation,† states: "Notwithstanding the various attempts that have been made to supersede dilatation, and the reproaches that have been cast upon it by different writers, it still maintains its place in the estimation of enlightened practitioners; and there can be no doubt that it is more frequently applicable than any other plan yet devised." He has not in his later works, to my knowledge, materially altered his views.

Dr. J. W. S. Gouley, a careful and experienced operator, states in his work upon this subject:‡ "I only resort to internal urethrotomy in *intractable strictures* of the ante-scrotal portion of the canal. . . . Success depends more upon the skill of the surgeon than upon the instrument he uses. Hæmorrhage is apt to follow deep incisions; likewise infiltration of urine, abscess, and *pyæmia* may supervene upon the *merest scarification*."§

Professor William H. Van Buren, in his late work,‖ thus expresses the results of his experience: "Cutting operations are growing daily in favor, yet, in the case of uncomplicated stricture, no matter how tight it may be, provided it does not prove resilient and is not of traumatic origin, if any instrument at all can be passed, dilatation is still the best method of treatment."

* "Jacksonian Prize Essay on Stricture of the Urethra," London, 1854, p. 173.

† "Treatise on the Urinary Organs," Philadelphia, 1855, p. 778.

‡ "Diseases of the Urinary Organs," New York, 1873, pp. 83, 93.

§ The italics are my own.

‖ "Treatise on the Surgical Diseases of the Genito-Urinary Organs," Van Buren and Keyes, New York, 1874, p. 153.

Mr. William Acton * concurs in these statements, as follows: "Dilatation is the plan of treatment the most generally applicable, and which most frequently succeeds."

Professor E. L. Keyes, in the latest work which has appeared upon this subject,† says: "Deep-seated strictures should not be cut internally, for the double reason that, (1) Cutting in this region is a proceeding dangerous to life; (2) cutting in this region does not effect a radical cure."

It seems unnecessary to further quote authorities to sustain the first objection that I raise, viz., that *the frequent employment of internal division of strictures is unnecessary, since other means can be generally employed.* Such universal condemnation of the unrestricted use of an operation that has long been before the profession, and which has had in the past its full share of criticism and support, would seem sufficient to the medical reader of the present day to establish this proposition, were not elements at work which have fanned the flame, and once more threaten the abuse of an operation which is valuable only within its proper limits, and consequent injury to many of its prospective subjects. Let us examine, therefore, in discussing this question: 1. What are the elements of its present popularity? 2. What are its dangers? 3. What are its benefits?

A. Its Elements of Popularity.—It would be an injustice to the valuable researches of one of our own city ‡ to fail to recognize that largely by his efforts in the past twelve years has internal urethrotomy been pushed to the front in this country as an improvement upon dilatation in the treatment of urethral stricture. Too much credit can not be given to him who has done so much to prove that the normal urethral caliber has been greatly under-estimated, and that an approximate relation exists between the circumference of the penis and that of its canal. He has shown great ingenuity in devising instruments; and a proper appreciation of existing urethral conditions can perhaps be gained better by his methods

* "Treatise on the Diseases of the Urinary and Generative Organs," New York, 1853, p. 96.

† "Venereal Diseases," New York, 1880, p. 305.

‡ Professor F. N. Otis, "Treatise on Stricture," New York, 1878.

than by those previously existing. I can not, however, refrain from quoting the following passage from a work which has lately appeared,* with which I am in the fullest accord: "I have raised my voice for what it may be worth in protest against the views of the new school in urethral pathology, which seems to claim that every natural undulation in the tissues of the pendulous urethra is a stricture fit for cutting, and that all the ills of the genito-urinary passages may be accounted for by the existence of these undulations, and usually made to disappear when the latter are cut. The theories of the new school are as ingeniously perfect as the instruments which carry them out; but, unfortunately, its claims seem to leave out of view that the disease for which the patient seeks relief is only a symptom; and that such symptoms may be due to a variety of causes. What will cure a symptom in one case, will not necessarily do so in another. And a serious criticism upon the methods of the new school is that it does not generally, in its list of published cases, give any prominence to those cases which *have been cut without relief*† of the symptoms complained of."

I can not myself agree with the advocates of this school that a meatus which is not accompanied by pockets on the upper or lower wall of the urethra should ever be divided to permit the introduction of instruments which shall correspond in point of size with the somewhat arbitrary measurement of the capacity of any individual urethra; nor have I ever been convinced that a radical cure of the stricture is always insured by the urethrotome, or that the symptoms do not, in a certain proportion of cases, remain after the operation, unless treatment by other methods is used in conjunction. Unless these two latter tenets can be fully maintained, the urethrotome must be considered as capable of being *judiciously used* only in a somewhat restricted number of cases. The chief advocate of this operation has himself, I think, met with a few cases in latter years where his operation (performed by himself) has been followed by a *return of the stricture;* and many where certain symptoms for which the operation was performed were not relieved.

* Keyes, *op. cit.* † The iralics are my own.

The use of the dilating urethrotome has been popularized by the claim of its advocates that it surpasses in its results the treatment of stricture by dilatation, in the following respects: 1. That it accomplishes, what other operations do not, a *radical cure* of stricture; 2. That it relieves certain symptoms far more effectually and rapidly than any other method of treatment; 3. That it is easily and quickly performed, when the details in the use of the instrument have been mastered; 4. That it is comparatively free from danger. These points summarize, in a general way, the main arguments in its favor which the profession are asked to accept; and it is not to be denied that the propositions, as above stated, have met with a more ready acceptance than the facts, in my opinion, seem to warrant.

Within the last few years the chief advocate of this method has been able to publish between *six* and *seven hundred operations* of his own (although details were given in only 236 cases), and *nearly as many more** which have been compiled from the case-books of two or three of his supporters (Pease, Brown, and Mastin).

Such an enormous number of operations—over 1,300—from so few sources, would in itself suggest that, if the operation has been justified, the general public has in the past been wofully neglected by the surgeons. But, when we take into consideration that the instrument makers are selling this instrument to nearly every new graduate in medicine, who are often only too anxious to test its merits and equal their predecessors in the number of cases reported, the conservative element may well question if by its indiscriminate use surgery is not rapidly being brought into disgrace, and if those who are now the advocates of the indiscriminate use of this operation will not, in time, regret the haste with which they accepted or prejudged its merits.

B. Its Elements of Danger.—Internal urethrotomy has been followed, from the statistics of collected and reported cases, by the following bad results: 1. Death from uræmia; 2. Death from pyæmia; 3. Death from shock; 4. Infiltration of urine; 5. Peri-urethral abscess; 6. Severe hæmorrhage; 7.

* Italics my own.

Cystitis; 8. Epididymitis; 9. Urethral fistulæ; 10. Deformities of the penis; 11. Impotence; 12. Atrophy of the penis; 13. Gangrene of the penis; 14. Prostatic abscess; 15. Acute urethritis; 16. Gonorrhœal rheumatism; 17. Phlegmasia alba dolens.

Before considering these results in detail, let us fortify our opponents by the published results of their own cases, which are supposed to support their views, and encourage others to subject future patients to a like proceeding when any diminution in the urethral caliber, no matter how slight, can be detected. Dr. Otis, in 1875, published his first hundred cases. An analysis of these cases shows the following accidents to have arisen:

Hæmorrhage	in 4 cases.
Rigors	" 6 "
Deformities of the penis from curvature	" 3 "
Prostatic abscess	" 3 "
Diphtheritic exudation	" 3 "
Retention of urine	" 1 case.
Necessity for perineal section after operation	" 1 "
" " aspiration of the bladder	" 1 "
Acute urethritis	" 2 cases.
Gonorrhœal rheumatism	" 1 case.

No deaths were recorded.

In the second series of cases (one hundred and thirty-six in number), published in his work,* the following accidents occurred:

Hæmorrhage	in 8 cases.
Rigors or urethral fever	" 11 "
Suppression of urine	" 1 case.
Deformity of the penis from curvature	" 6 cases.

He also reports *two fatal cases* where the dilating urethrotome was used in connection with perineal section, and *two others* where internal urethrotomy was alone performed.

One of these patients died of *pyelo-nephritis* and *renal abscess* on the 16th day
The second died of *suppression of urine* and *uræmia* on the 3d day.
The third " " " " on the 6th day.
The fourth " " " " on the 8th day.

Professor Pease, of Syracuse, reports a freedom from *accidents* which is rather remarkable, even when compared with

* Otis, *op. cit.*, pp. 311, 317.

the cases above recorded, but he still acknowledges to have had one severe case of urethral fever and two cases of severe hæmorrhage.

It may strike those who attempt to analyze the reported cases of Dr. Otis, Dr. Pease, Dr. Mastin, Dr. Brown, and other advocates of the dilating urethrotome, that hæmorrhage is not more frequently reported, but a foot-note in Dr. Otis's volume, on page 280, explains that "hæmorrhage is not enumerated as one of the accidents, unless, *in spite of ordinary measures* used to control it, an excessive quantity of blood is lost." (The italics are my own.) If "ordinary measures" mean the urethral tube, the cold-water coil, the perineal crutch and tourniquet, etc., perhaps to others unprovided with these appliances a hæmorrhage might occasion anxiety, which to them would seem trivial.

It seems also, from the published statement of Dr. Otis, page 277, that cases operated upon by him for other surgeons have not been included in his list of reported cases. This is to be regretted, as I have received from others during the last few years general statements of bad results, which are of course useless as scientific facts, but which should have been given to the profession, if the volume was to embody all the facts, and thus enable physicians to judge intelligently of the demerits as well as the merits of the operation.

It would seem that I am not alone in this opinion. Dr. Sands, in a pamphlet (1879), facetiously remarked that "it was sometimes hard to reach fatal or disastrous cases, which were often considered a kind of private property of the owner." In our city hospitals cases have occurred within the last few years which have been followed by serious consequences, if the personal statements of others can be relied upon, but I find no published record of many whose details would be of value. Dr. Keyes, in a passage previously quoted from his latest work, seems to convey the impression that, in his opinion also, the reports of the cases operated upon with the dilating urethrotome do not fairly represent the dangers which may ensue. Until more care is exercised in the recording of hospital cases, and until, in some way, they can be published in full for professional inspection, it will be more

than difficult to accumulate accurate statistics of any of the *later methods* of treatment. It has proven difficult with myself to find a sufficiently large list of cases upon which the dilating urethrotome has been employed, to properly verify the frequent occurrence of the other dangers which have been mentioned as liable to happen. But, as the new instrument only insures a more reliable and possibly as deep an incision as those of Civiale, Maisonneuve, Voillemier, Charrière, Reybard, Peters, and the host of others, the unfortunate results even of the distant past can still be justly regarded as a guide for the future; since no element has been introduced by the "new school" to lessen the possibility of danger.

Although, in these three hundred cases reported by Dr. Otis, but four cases of death have occurred, still fatal results have been known to follow this later method of treatment, in a relative proportion which is vastly greater, where the operation has been performed by skillful hands.

Professor Sands, of New York, in a pamphlet published in 1879, says: "I have heard of *a number of cases* where death has resulted from the employment of the dilating urethrotome. . . . I can state with authority, however, that *three fatal cases* of operation with the dilating urethrotome have lately happened in our city hospitals, two of which occurred last week in one hospital. . . . In two of these cases death took place from *pyæmia within a week* of the operation. In the third case, death occurred from *uræmia* on the sixteenth day after the operation, which was performed for the division of an anterior stricture which was so slight as to be detectable only with a bulbous sound, No. 24 F."*

Mr. Berkeley Hill † summarizes the results of sixteen cases operated upon by him with the dilating urethrotome as follows: The *operation was serious* in two instances. One patient had *alarming hæmorrhage*. Three had *severe rigors*. In eleven cases the *gleet persisted*. *Abscess of the buttock* appeared in one. *Orchitis* appeared in one. In only *five* was the *operation successful*. In four, bleeding continued for several days.

* The italics in these quotations are mine.

† "The Lancet," April 8, 1876.

It is but just to Dr. Otis, as the chief advocate of this method, to say that he explained, in a later publication,* certain facts which may have accounted for the bad showing, but, if the operation is unsafe in the hands of good surgeons, unless specially experienced in its performance, is it not proper that the general profession be warned against attempting it?

Let us look again at other results of this method, as reported, before we investigate the previous results of urethrotomy.

In Dr. Sands's pamphlet† the following passage will be found: "I have frequently seen the operation of slitting the meatus carried to such an extent that the patient was unable to project the stream of urine in a natural manner; and I know of a case in which an eminent surgeon was obliged to perform a plastic operation to restore a meatus that had thus been destroyed. I have seen, in consultation, persons who have suffered from troublesome hæmorrhage, varying in duration from a few days to a month, in consequence of having been cut with a dilating urethrotome."

In 1876, as I am informed, a case was operated upon in one of our hospitals, which resulted in internal hæmorrhage, which completely filled the bladder, and the expulsion of eighteen ounces of clotted blood took place on the withdrawal of a catheter of large size, some days after the operation. The patient recovered, but the stricture returned within a few months. In 1870 I myself witnessed an operation in one of our hospitals, with which I was at the time connected, which resulted in gangrene of the penis, due to infiltration of urine, and which was followed by death.‡ In 1876 I performed division of a stricture which was too firm to admit of dilatation, and the patient died of total suppression of urine in sixty-seven hours after the operation. I had many months previously performed the same operation upon him without any bad symptoms following, but the stricture had returned to even a worse condition than when first seen.§

* "The Lancet," June 3 and 10, 1876.

† "A Reply to Dr. Otis," New York, 1879.

‡ "Bellevue Hospital Reports," 1870.

§ "The New York Medical Journal," May, 1880.

Dr. Banks, in his report of three fatal cases after attempts to pass an instrument through very tight strictures, attributes the accident chiefly to shock, since uræmic symptoms were absent; * but it is a question, as the instruments passed were of very small size, and therefore of necessity *sharp at the point*, if in at least one of the cases some injury was not done to the urethra differing but little from an incision. Within the last year I saw in consultation a case where atrophy of the penis and impotence appeared after internal urethrotomy, followed by severe hæmorrhage; but I am not prepared to say that it was attributable to the operation, although no other cause could be ascertained, and the patient had, previous to the operation, been in good health, excepting in regard to the frequency of micturition.† He has since died of renal disease. In two fatal cases reported by Bumstead,‡ the strictures were situated at about four inches from the meatus, and death ensued from septicæmia in four and fourteen days, respectively. In these cases the Otis urethrotome was employed. Dr. Bridon § reports a case of death from internal urethrotomy, performed with the instrument of Maisonneuve, as a result of suppression of urine. Renal disease, however, existed prior to the operation.

One of our leading surgeons lately lost a patient, in hospital practice, after internal urethrotomy. The details of the case have not been published.

Another well-known surgeon of this city lost a patient in another hospital, after an operation with a Maisonneuve instrument. M. Guyon, of Paris, in the published results of internal urethrotomy in 1876, 1877, 1878, reports one case of death in a total of fifty-two cases, but he has since reported a total of two hundred and fifty cases, with seven deaths.

Mr. Prescott Hewett,‖ in 1863, reported a case of death from suppression of urine, following instrumental manipulation which drew blood. Mr. Teevan ¶ reports, in 1876, three

* "Edinburgh Medical Journal," June, 1871.

† "The New York Medical Journal," May, 1880.

‡ *Op. cit.*, p. 309.

§ "The Medical Record," March 6, 1880.

§ "The Lancet," 1863, vol. ii.

¶ Ibid., 1876.

cases of death in the Hôpital Necker, following internal urethrotomy. Leroy d'Étiolles, in reviewing Reybard's cases, reports having witnessed two fatal cases at the Hôtel Dieu and one case of the most alarming hæmorrhage, which caused, serious doubts as to the patient's recovery.* Dr. Gouley reports a fatal case, and one in which thrombus of the iliac vein and phlegmasia dolens followed the operation of internal urethrotomy. Dr. Otis, † as before stated, reports four cases of death as occurring in his own practice. Three of the patients died on the third, sixth, and eighth days after the operation, of suppression of urine and uræmia, while one died on the sixteenth day of pyelo-nephritis and renal abscess. In two of these cases, however, perineal section was combined with the use of the dilating urethrotome; so that an additional source of danger existed.

It seems, from collected statistics, that sixty-six deaths are already verified as the result of internal urethrotomy, and that the possibility of the other dangers enumerated as liable to follow this operation is supported as well by Professor Otis's reported cases as by the opinions of those against whom the claim of prejudice might be urged. I can not refrain from quoting the following sentence from the article of Mr. W. Mitchell Banks,‡ commenting on the dangers of the use of instruments within the urethra: "When a patient, the victim of some grievous malady which is hurrying him to certain death, prepares to submit to a hazardous operation for its relief, both he and the operator have weighed the chances of the operation over and over again. If the operation succeed, it is a triumph to both; if it fail, the surgeon can console himself with the fact that he did all that his skill enabled him to do, while he may derive, from his very failure, practical experience which may guide him to happier results in the future. But it is a very different matter when a man, perhaps in the prime of life, and, with the exception of a mere local ailment, in good health, lies down upon the consulting-room sofa or the hospital bed, submits to a comparatively simple operation, has

* Wade, "On the Treatment of Stricture," London, 1860.

† *Op. cit.*, p. 311.

‡ "Edinburgh Medical Journal," vol. xvi, 1871, p. 1078.

a rigor, and is dead within twenty-four hours. That such is not an overdrawn picture the case just narrated proves; and the melancholy feature is that, in spite of all ordinary precautions, we can not always guard against such accidents."

I am well aware that such fatal accidents can not be used as evidence that the operation of internal urethrotomy should not be performed. All surgical operations have a percentage of risk that the patient and the operator should both appreciate. But the point which this portion of the paper aims to impress upon the profession is this, viz.: *That the operation of incision into the walls of the urethra greatly increases the percentage of danger, when compared with the results of dilatation; and that the proportion of those complications which have been enumerated to the total number of patients cut is relatively greater than is usually supposed.*

It is difficult to obtain the percentage of danger in the treatment of strictures by dilatation, as any form of complication is extremely rare—so rare, indeed, that the twelve deaths from catheterism, reported at different times in the leading journals, would be lost sight of in the thousands of cases in which relief has been afforded the patient without any unpleasant consequences having arisen. I can state that, within the last ten years, I have treated at least two hundred cases of marked stricture by dilatation alone, and that I have never known but five cases where a chill, abscess, orchitis, or other complication occurred. Possibly my results have been unusually fortunate, but I think the statistics, if all the cases of successful dilatation could be gathered together, would show the percentage of danger reduced almost to the minimum; that the process of dilatation, if gently and skillfully practiced, will relieve most of the cases; and that the symptoms will be arrested without anxiety to the surgeon or the patient.

C. The Benefits Claimed.—From the published statements of the advocates of the dilating urethrotome, the following premises seem by them to be considered as fully proved:

1. That "gleet is the signal which Nature holds out to indicate the existence of urethral stricture"; and that by the removal of the cause the only means of *radical cure* of this symptom is insured.

2. That *certain obscure symptoms*, among which may be mentioned neuralgic pains in the pubic region, the back, the rectum, the testicle, and the lower limbs, are reflex in character, and are likewise dependent upon urethral stricture, in a large proportion of cases.

3. That all methods of treatment of urethral stricture save incision have been found worthless as a means of radical cure.

4. That the dilating urethrotome does effect a radical cure of the stricture, and that the symptoms dependent upon the latter are likewise relieved in the majority of cases.

5. That the operation advocated is comparatively *free from danger*, and that the benefits derived from its use recommend it to the medical profession, to the exclusion of the older methods of treatment.

6. That the records of published cases in which the urethrotome has been used support each and all of these conclusions.

It is impossible, within the compass of one single article, to discuss whether the first three of these propositions can be fully established. The causes and treatment of gleet are questions which to-day are certainly open ones, and cases are reported of its cure by other methods of treatment as well as by the use of the urethrotome. The first proposition, in itself, involves the great and undecided question of *what constitutes a stricture*, and until the profession can agree upon this point, it is useless to attempt to discuss it. Those who claim that the normal urethral caliber is not impaired, provided an instrument corresponding to 23 or 24 F. can readily be passed to the bladder, and that all apparent constrictions detected by larger instruments are mere undulations in the urethral walls, not dependent upon disease, can unquestionably present cases not in accordance with this view. Thus, Sir James Paget says: "Every year teaches me more and more plainly that a very large number of cases of stricture of the urethra are not really dependent on any fixed condition of the urethra, but are mere *swellings of the mucous membrane*."* Such an opinion from so prominent an authority can not be hastily set aside.

The second proposition opens again for discussion the great

* "Clinical Essays and Lectures," London, 1875. The italics are my own.

question of *reflex irritation and its various manifestations.* That such conditions do exist, no one at all familiar with the literature of the subject can deny, although "sexual hypochondriasis" may account for a large proportion of imaginary symptoms, which are to be distinguished from those due purely to reflex irritation; but, when symptoms referred to parts distant from the urethra are interpreted as dependent upon urethral constrictions of large caliber, not impeding the flow of urine, and are made the indication for a cutting operation which is not infrequently followed by serious complications, the advisability of such a procedure may well be questioned. Of the second series of operations reported by Dr. Otis (136 in number), 78 were performed for the cure of gleet, and 48 for the relief of reflex troubles. It may well be asked, if self-questioning is of any value in determining our actions toward others, how many of us who are here assembled would have our urethra cut for pain in the back, pubes, perinæum, rectum, or legs, until we had exhausted every other means of relief which had ever proved successful in the cure of such conditions?

Let us see what have been enumerated as reflex troubles in 59 cases of this character, appended to this paper,* where accidents have followed the operation of internal urethrotomy:

Frequent and painful micturition	in 15	cases.
Seminal emissions	" 4	"
Premature emissions	" 3	"
Neuralgic pains in distant parts	" 5	"
Imperfect erection	" 2	"
Spermatorrhœa	" 1	case.

It may not seem out of place to ask if such conditions have not frequently been seen by many of us, who have cured them by simple measures rather than by recourse to the knife. All these methods may have been tried even in these cases previous to the operation, but no such statement is made, nor can I see how the cure reported of these symptoms carries any positive evidence either for or against the use of the operation in preference to other and simpler means of relief.

The third proposition, which denies the possibility of cur-

* As read before the Academy.

ing stricture by any other method, is one well worthy of discussion. To my mind, more importance has been attached by the advocates of this new method of treatment to the possibility of the return of stricture than the histories of cases seem to warrant. In a few occasional instances, strictures do manifest a quality which is called *resiliency*, and which is evidenced by a tendency to return to their former caliber almost at once after the withdrawal of a dilating instrument. Such cases as these, as is evident to any reasonable mind, can not be benefited by dilatation, and must continue to produce their own symptoms until *by incision* or *rupture* their elasticity is destroyed. Strictures of *traumatic origin*, which are usually indurated and cartilaginous in type, often fail to yield to the most persistent efforts to dilate them, and, even if fully dilated, are with difficulty kept from re-contraction by the occasional passage of an instrument. In the majority of instances, however, the ordinary forms of stricture, which result from inflammatory conditions of the urethra, are easily dilated, and can be kept free by the occasional passage of an instrument by the patient himself, in case a tendency to re-contraction is anticipated. From my own experience, and from that of others who have practiced this system of treatment in a much larger number of cases and for a much longer period of time, I have never had any reason to doubt that a *certain proportion of cases have been completely cured by dilatation*, while in others the tendency to re-contraction was so slow that the patients were relieved from all symptoms for a long period of time, even where instruments were not introduced at intervals to prevent the return of the trouble.

The advocates of urethrotomy, however, lay great stress upon the annoyances which must arise from the necessity of a constant passage of instruments at stated intervals by the patient or by the surgeon, and contend that a means, even if it has dangers, which will insure a radical cure, would be accepted by intelligent patients in preference to a method of treatment which required future care and attention to the diseased part. This objection, to my mind, appears to be in opposition to reason, provided the patient feels assured that, by a process which has few if any dangers associated with it, the

symptoms for which he seeks relief can be effectually controlled by the passage of an instrument at intervals of seven or fourteen days after dilatation is once accomplished. On the same ground, it might as well be argued that persons who did not desire the growth of a beard would prefer the operation of depilation to the occasional annoyance and expense of shaving.

The aim of all forms of treatment is, principally, to relieve the symptoms which are distressing the patient, and I have never found, from personal observation, that patients would not willingly and joyfully accept a means of relief in which the dangers were slight and no privation from business was required, in preference to one where the complications might be distressing and where confinement to the house was an absolute necessity. Unfortunately for the sake of the argument, the advocates of dilatation, not feeling the great necessity of convincing the profession of the possibility of a radical cure, have not reported as fully as might be wished the caliber of the strictures which they were called upon to treat and the results of a subsequent examination; but I think it can be positively stated, that, in some instances at least, strictures of the urethra have, by constant dilatation, been entirely cured, through an absorption of the inflammatory products in or around the urethral walls, to whose contraction the urethral constriction was originally due.

The fourth proposition, that the dilating urethrotome does effect a radical cure of strictures of the urethra, I am prepared to accept—with the proviso that this method, like the one whose merits have been previously argued, *will also occasionally be found to fail* in accomplishing permanent relief. I am inclined to think that, perhaps in a proportion of cases even larger than dilatation can present, prevention of re-contraction follows the use of the urethrotome; but even this admission hardly seems to me sufficient to justify the use of this instrument, except in such conditions as are associated with symptoms which a prolonged and careful trial of the treatment by dilatation has failed to arrest. I do not think that any circumstances, no matter how serious, should justify a surgeon in resorting to internal urethrotomy when the stricture is situ-

ated more than four inches from the meatus, since external section affords a better prospect to the patient. In almost all the cases reported where serious consequences have followed the use of the dilating urethrotome, the situation of the stricture has been below that point. Rigors, severe hæmorrhage, urethral fever, and urinary infiltration are much more liable to occur when an incision is made in the deep urethra than when it is made anterior to the peno-scrotal junction.

Robert Wade * takes positive issue with the advocates of the urethrotome, in the following sentence: "It is well known that internal division of strictures was fully tested in England by Guthrie and Stafford, who lately acknowledged its hazards, and were so much disappointed with the little permanent relief which it afforded, that they were ultimately induced to abandon the practice, except in cases of emergency. Should the views which I have advanced induce others to hesitate before they resort to the more hazardous method of treatment which has lately been too prevalent, it is to be hoped that my labors in this branch of the profession may prove useful in saving many patients from the risk incurred by them from operations not infrequently fatal, and which, I feel convinced, are seldom required."

The fifth proposition, that the operation with the urethrotome is comparatively *free from danger*, has been quite extensively discussed in previous pages of this article. It is, however, with great interest that I present, in addition to the statistics before mentioned, an analysis of the essay of Dr. W. Grégory,† which has created no little comment in some of the leading journals of Europe. Dr. Grégory, in summing up the cases of internal urethrotomy collected by him, says: "In adding the total of the results obtained from different statistical reports, we arrive at a grand total of 872 cases, with 38 deaths; and, if the cases from the records of the Hospital of St. André be added, we have a total of 915 operations, with 46 deaths; giving a mortality of five per cent." In his paper I find some of the fatal cases which I report omitted, while, on the other

* Wade, "On the Treatment of Stricture," Preface, London, 1860.

† "De la Méthode Sanglante dans les Rétrécissements de l'Urèthre," Paris, 1879.

hand, he gives the records of many cases which it would otherwise have been impossible for me to reach.

From the same essay other deductions may be drawn, as follows: 1. The proportion of fatal cases to the total of recorded operations with the urethrotome has been under-estimated by the profession at large, and almost equals that of perineal section; 2. The other accidents which may accompany the operation are often most alarming, especially that of hæmorrhage; and the statistics offered by European surgeons show a much more serious list of dangers than the reported cases of some American surgeons would indicate; 3. The comparative freedom from the dangers of hæmorrhage and urinary infiltration presented by perineal section, and the nearly equal percentage of mortality with which the operation of internal urethrotomy seems to be associated, are leading the thinking men of our profession to question if internal incision within the deeper portions of the urethral canal should ever be performed.

From a close analysis of those reported cases where the facts are given in sufficient detail to allow of any positive deductions being drawn, I summarize the results of internal urethrotomy as follows:

In the 240 cases which Dr. Otis * reports as operated upon by himself, and in all but four of which full details are given, we find that

Hæmorrhage occurred	in 5·5	per cent.
Rigors or urethral fever	" 7	" "
Deformity of the penis from curvature	" 4	" "
Death	in about 2	" "

In the 43 reported cases of the Hospital of St. André, the details of which are fully given by Grégory: †

Hæmorrhage occurred	in 36	per cent.
Urethral fever	" 59	" "
Rigors	" 36	" "
Abscess	" 9·5	" "
Infiltration of urine	" 14	" "
Retention of urine	" 16	" "
Death	in nearly 20	" "

* Professor T. N. Otis, "Treatise on Stricture," New York, 1878.

† *Op. cit.*

In the 68 reported cases of the Hospital of the University College, the details of which are also given by Grégory, we find that

Hæmorrhage (severe) occurred	in	7	per cent.
Urethral fever and rigors	"	20	" "
Abscess (perineal)	"	11	" "
Curvature of the penis	"	4	" "
Abscess (lumbar)	"	4	" "
Orchitis	"	4	" "
Pyelitis	"	3	" "
Cystitis	"	6	" "
Death	"	5·75	" "

The fatal cases (sixty-eight in number) collected from the statistics of Dolbeau, Maisonneuve, Guyon, Voillemier, Gosselin, Sédillot, Reybard, Barbosa, Tillaux, Labat, Sentex, Lannelongue, Otis, Bumstead, Van Buren, Goulêy, Stein, Denucé, and others, show the average proportion of deaths to be about 5 per cent.

The records of those cases where serious accidents or complications have followed the operation of internal urethrotomy, show a rapidly increased percentage of such accidents in operations performed *below three inches* from the meatus. Cases of hæmorrhage, where this operation has been done at the office, and the patients sent to their homes, are becoming so frequent in this city that surgeons are constantly having their attention called to them.*

The personal statements of some of our leading surgeons, lately made to me, confirm the experience of myself and others, who have been alarmed at the hæmorrhage which sometimes occurs; and several have assured me that, for this very reason, they now hesitate to cut unless compelled to do so.

The occurrence of urethral fever seems to be much more frequent in Europe than in this climate; but rigors are a very common sequel of the operation, even in this country. This sequel may not always possess a great clinical significance,

* After this article was written, an ambulance brought into one of our city hospitals a patient who was with some difficulty saved from death from hæmorrhage, where this operation had been performed in a dispensary, and the patient sent home without attendance. Had his condition not been accidentally discovered, he would have bled to death alone in his rooms.

but I question if a severe chill, when dependent upon a surgical procedure, does not always create anxiety in the mind of a careful surgeon, since it may indicate the commencement of some serious complication.

The deformity of curvature of the penis is often spoken of by the advocates of urethrotomy as a trivial and temporary annoyance, and of but little consequence; but, in my experience, it sometimes proves permanent, and always creates a feeling of annoyance and disgust on the part of the patient, which it is difficult to appease. I have collected from private case-books in this city the records of some 200 operations which have never been reported. I find by analyzing them that a large percentage of patients have been cut for what have been diagnosticated as reflex troubles, such as lumbago, sciatica, and plantar neuralgia; and that in most of the other cases chronic gleet was taken as the indication for surgical interference. In a remarkably small percentage of these cases was the contraction sufficient to impede the flow of urine or probably to render it evident to the patient that a stricture existed, unless first so informed by his physician. It is greatly to be regretted that, in the larger proportion of the cases which I have been able to reach, the details as to the situation of the stricture, its length and caliber, the severity of the symptoms complained of by the patient, and the previous methods of treatment employed for the relief of these symptoms, are either so given as to be worthless for comparison or are entirely omitted.

In concluding this article, I present the following rules, which I consider as the proper guides in the treatment of uncomplicated urethral stricture:

1. Seldom resort to the knife, except the stricture be of *traumatic origin* or *resilient*, or situated at the meatus.

2. Never perform internal urethrotomy if the situation of the stricture be *more than four inches from the meatus.* (I question if three inches would not be a safer rule.)

3. In *strictures of the deep urethra*, in case dilatation is impossible, *divulsion* and *perineal section* are the two best methods of treatment.

4. Dilatation, if carefully and judiciously used, will be

found to be practicable in the majority of cases, and in many cases will *entirely relieve all symptoms.*

5. Internal urethrotomy, if performed for the relief of "strictures of large caliber," should be resorted to only when the symptoms presented by the patient *have been treated by other methods without relief;* and then only in the anterior four inches of the urethral canal.

In support of my first rule, viz., never to cut internally if the stricture be situated more than four inches below the meatus, I present the following statistics as afforded by those of the collected cases where the full details are given. In Dr. Otis's reported cases (two hundred and thirty-six in number) all the patients that had hæmorrhage after the operation, with two exceptions, were cut below this limit; while rigors occurred only four times, curvature five times, and abscess twice, when the operation was performed in the anterior four inches of the canal. Should the rule be modified to three inches, instead of four, the percentage of accidents would be found to be much smaller than that previously given.

In the total of cases collected, urethral fever seems to occur in a large proportion of operations where the incision is made at a point more than three inches and a half from the meatus, and seldom to follow incisions in the anterior portions of the urethra. Infiltration of urine and abscess must of necessity occur in a larger percentage of cases in which the incision is made in the region of the bulb than of those in which it is made in the ante-scrotal portion of the canal.

I can not agree with those who claim that incision of the *upper wall* of the urethra obviates the danger of infiltration or hæmorrhage. It may possibly decrease the danger of infiltration, but I can not see why an incision through the corpus spongiosum and possibly into the corpora cavernosa, near the point of union of the crura, should have any decided advantage in respect to hæmorrhage over an incision in the median line of the bulb.

The other rules given for the treatment of stricture of the urethra differ but little from those advocated by most of the conservative surgeons whom I have consulted, and from whom I have quoted in this article; and they seem to me to be sus-

tained by the results of those reported cases which have been previously analyzed.

Finally, I trust that this paper, while plain words have of necessity had to be spoken, betrays no evidence of a spirit which is not that of a "seeker after truth." When new theories are advocated, and the profession is asked to accept new procedures as improvements upon well-tried methods of treatment, no replies can be made without constant reference to the source of such new views, and a close analysis of the facts recorded.

SUMMARY OF CASES ANALYZED.

Grégory	915 cases
Otis*	214 "
From private case-books, about	200 "
From scattered sources (among journals and monographs), about	100 "

* I find 100 of the cases reported by Dr. Otis recorded in Grégory's "Essay," and the 214 cases enumerated above represent, therefore, only the remainder of the cases contained in Dr. Otis's volume.

THE POPULAR SCIENCE MONTHLY.

THE interests to which this magazine is devoted are the most important in modern society. Science is the grandest agency of amelioration and improvement that is at work in civilization. It is constantly enlarging our knowledge of Nature by new discoveries; it is perfecting all the arts by the application of new facts, principles, and processes; and in its progressive course it has reached and is profoundly affecting all the higher questions of human interest—the problems of statesmen, jurists, financiers, divines, artists, historians, moralists, educators, philanthropists, and social reformers.

THE POPULAR SCIENCE MONTHLY is the only periodical devoted to the science of all these great subjects, and it treats them in a manner suited to the wants of intelligent non-scientific people. It represents the most valuable thought of the most advanced scientific men of the age in all countries. Its articles and abstracts of articles, original, selected, and illustrated, will be found to reflect comprehensively and faithfully the general progress of scientific ideas in all departments of popular interest.

TERMS: $5.00 per annum; or, 50 cents per number.

The volumes begin May and November of each year. Subscriptions may begin at any time.

THE POPULAR SCIENCE MONTHLY and APPLETONS' JOURNAL, together, for $7.00 per annum, postage prepaid. (Full price, $8.00.)

APPLETONS' JOURNAL:

A Magazine of General Literature.

APPLETONS' JOURNAL is devoted to literature of a sterling and general character. Fiction occupies a place, and Descriptive Papers appear; but large place is given to articles bearing upon Literary and Art Topics, to discussions of Social and Political Progress, to papers addressed distinctly to the intellectual tastes of the public, or upon subjects in which the public welfare or public culture is concerned.

It is the growing habit of the leading minds in all countries to contribute their best intellectual work to the magazines and reviews; and, in order that APPLETONS' JOURNAL may adequately reflect the intellectual activity of the time thus expressed, it admits to its pages a selection of the more noteworthy critical, speculative, and progressive papers that come from the pens of these writers.

25 cents per number; $3.00 per annum, in advance, postage included. A club of five will be sent one year for $12.00.

The volumes begin January and July of each year. Subscriptions received for any length of time.

D. APPLETON & CO., Publishers, New York.