

lar changes take place in the posterior roots. According to H. K. Anderson,<sup>9</sup> section of the sciatic nerve in young animals checks the development of the corresponding ganglia and posterior roots and of the cells in Clarke's column of the same side.

These observations furnish ample proof that at the time of incipient recovery the central connections of the cut nerve are not in normal condition, which makes it probable that their function also is altered. If we assume, for instance, that through the degeneration process the connections of neurons are loosened, it seems quite likely that after the operation stronger stimuli are needed to evoke sensations than under normal conditions, and that the irritation once established is little changeable as regards intensity and irradiation, which means that summation and localization are very imperfect. The assumption is the more probable since it is known that certain drugs act in a similar way. I believe, therefore, that the many interesting points brought forward by Dr. Head can be accounted for by reference to certain well-established physiologic and pharmacologic data. It seems, therefore, at least for the present, not necessary to introduce a hypothesis to which existing physiologic and psychologic data do not lend support.

I am quite aware that the explanation that I propose, like his, is more or less a hypothetical one. Still it has the advantage, as I believe, of being consistent with all the observations as yet known. Of course, every hypothesis is by itself transient and has to be changed as experience grows. That is the reason why I have wished to bring the matter before you, hoping that your experience will show me how far my conclusions are right and where I have missed the point. I am quite convinced that physiology alone, unaided by clinical observation, would be very slow in unraveling the mysterious functions of the nervous system.

#### DISCUSSION.

DR. L. F. BARKER, Baltimore, said that the Section was to be congratulated on having had the opportunity of hearing Professor von Frey give the results of his investigations. In 1895 it was his privilege to meet him for the first time and to have him demonstrate the method for distinguishing these four cutaneous senses, touch, pain, cold and warmth. It so happened that Dr. Barker had in his arm an area of elective anesthesia, due apparently to a cervical rib. In this area he felt pain sensations, but no cold, no warmth, and no touch. It interested him especially because he had an opportunity to study pure pain sensations unmixed with any other. At Professor von Frey's suggestion he studied this area and the adjacent skin for some six months under his direction. It was illuminating to see how his delicate methods permit the demonstration of the various sense points. The fact that he experienced pain sensations free from the other sensations in the area mentioned speaks strongly in favor of von Frey's view of independent pain nerves. The pain points are so close together in the normal skin, and are so difficult to stimulate without stimulating sensory points of other modalities, especially touch points, that many have found difficulty in convincing themselves of the accuracy of von Frey's observations. After becoming acquainted with pure pain sense it was easily possible for him to localize both touch points and pain points, and to distinguish them sharply from one another in normal skin. Of the many names connected with the physiology of cutaneous sense those of E. H. Weber, M. Blix, and Max von Frey are the most important.

DR. S. J. MELTZER, New York City, said that there was no pain from heat; he could not say as to cold. His observations were made under local anesthesia. In one case in which mag-

nesium sulphate was used, an operation was performed and the patient did not know he had suffered any pain. He had also had experience in the use of cocaine. When this is used the sense of touch is present although the sense of pain may be absent.

DR. S. I. FRANZ, Waverley, Mass., said he would like to ask Professor von Frey to explain from his point of view the results of the temperature tests made by Head and Sherren. Most of Head's subjects showed a loss of ability to appreciate medium temperatures, but a retention of sensation of the extremes, but Head also describes at least one case in which the extremes were not felt although the medium temperatures were properly appreciated. The first of these conditions may be explained as due to differences in threshold values, but when coupled with the second it suggests very strongly the probability of two different sensory mechanisms, one for moderate and one for the extreme temperatures—in addition, perhaps, to the "heat" and "cold" end organs and conducting nerves, which Professor von Frey has so ably demonstrated.

PROF. MAX VON FREY said he agreed entirely with Professor Barker in the view that different kinds of painful sensations exist. They could all realize that from cutting they suffered a different sensation from that resulting from strain of a joint. Pain may arise in nearly all of the tissues, while cold, warmth and touch are limited to the skin and mucous membranes. He called attention to the important work of Professor Tullenberg, who had shown that by high temperatures two heat sensations are produced, one a superficial and the other a deep one. Of course this had nothing to do with the assumption of Dr. Head, who assumes that the skin is supplied with two sets of nerves. Professor von Frey thought it important to investigate the different effects of poisons on the sensations; of cocaine on the eye, for instance. The eye is very good for the carrying on of certain experiments. In using cocaine he came to the conclusion that there was a difference in the lapse of time in the disappearance of the sensations of cold, warmth and pain. He was unable to make very extensive investigations. As to the remarks of Dr. Franz he thought he had shown that the differences which Dr. Head has observed are in the main due to differences in the temperature. He had to apply higher temperatures usually. Of course they would have to wait for a final paper by Dr. Head, but it seemed unnecessary to hold to the conclusion that there are two sets of nerves.

There was another experiment which was very startling in its results when done for the first time. It consists of putting a part of the finger or hand into mercury, which of course puts it under a high pressure, and this is not felt. Why is this possible? A very light touch will arouse the sensation of touch, while this will not. Professor von Frey found this to be due to a peculiarity of the touch nerves.

#### A SUMMARY OF THE THERAPEUTIC FIELD FOR THE PAST YEAR.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON PHARMACOLOGY AND THERAPEUTICS AT THE FIFTY-SEVENTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, BOSTON, JUNE 5-8, 1906.

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Custom and the by-laws of the Association have ordained that your chairman shall outline the progress and advance in pharmacology and therapeutics during the year. To mention all of the advances in therapeutics in the past year would require a résumé of the progress made in the cure of disease in all the departments of medicine. The scope of this Section really embraces the whole art of curing disease and everything of a therapeutic nature is an open field for our discussion. I shall take up only those therapeutic measures that directly interest the general practitioner.

9. Jour. of Physiol., 28, 499, 1902.

## GENERAL REVIEW.

The number of useful remedies introduced during the past year has been very few. It is true that the usual horde of organics and synthetics made in Germany have come, though with somewhat abated vigor, but thus far few have been of any signal service. Doubtless a potent cause of the failure of the new agents to attract attention is due to the fact that experimenters, reputable and otherwise, are now more chary in extolling the imaginary advantages of a new agent than they were before the crusade of the past year.

Better appliances and more experience are responsible for the increasing use of ethyl chlorid as an introductory anesthesia, preparatory to administering ether. For this purpose it is rapidly replacing the more cumbersome nitrous acid and is apparently quite as safe. The great claims set forth as to the value of scopolamin-morphin anesthesia have, in a measure, fallen to the ground. At one time proposed as a general anesthetic and now used as a preparative sedative to ether anesthesia, it is but slightly superior to morphin and atropin. For many years morphin and atropin have been used for the purpose of quieting patients before anesthesia, and for this purpose scopolamin and morphin have scarcely any other advantages. The lack of excitation is more than counterbalanced by the after depression. Chemically, it is the same as atropin and the Pharmacopeia regards it as an equivalent. Like the Greeks, we are always running after the old gods with the new names.

The treatment of syphilis by hypodermic injections of soluble salts of mercury has, during the past year, received a great impetus, by reason of the almost unanimous advocacy of this measure by the eminent syphilographers who have written on the subject. It is safe to say that the treatment of syphilis by inunctions will soon be a thing of the past. In Germany the intravenous use of some of the preparations of digitalis has achieved decided recognition; in this country nothing has been done in this line as yet.

No new organic silver salt of any consequence has been launched within the past year. Sober second thought is gradually convincing us how seldom it is possible to "shoot" the virulent germs and the number of successful results reported from the use of organic antiseptics has materially diminished.

A few new cocain substitutes are now before the profession awaiting trial. Personal observation leads me to believe that their seeming advantages are more than counterbalanced by other disadvantages.

Little has been heard during the year of the use of large doses of creosote and its derivatives in the treatment of pneumonia. Doubtless, it is still employed to a large extent for this purpose, but except for its effect on an accompanying bronchitis, the impression is gaining ground that it is not of any distinct service. From the Southwest, where, apparently, pneumonias are of a milder type than ours, comes a second champion who lauds massive doses of quinin and chlorid of iron as a specific in the treatment of this disease. It may be said to be still on trial, but certainly we in the East can not get the good results that its sponsor says he achieves in the Southwest.

In the large metropolitan hospitals there is a feeling of therapeutic nihilism as to the medicinal treatment of pneumonia, and in the vast majority of cases the treatment is expectant in character. It is safe to say that strychnin is the only agent used with any constancy. The mortality rate of from 20 to 40 per cent. certainly

should be modified by judicious medication. The tendency to secure medicinal agents from animals rather than from the plant kingdom, has increased during the past year. The use of Moebius serum of thyroidectomized sheep has been established as a measure of practical value in the treatment of exophthalmic goiter. The serum of Beebe and Rogers, although differing very much from that of Moebius, promises well. The Italians have been very active in this line of work and many favorable observations have been made by them in the treatment of leukemia and anemia and other blood diseases with various sera.

There has been little added to our knowledge of the therapeutic value of the suprarenal glands; on the other hand from several sources a note of warning has come as to the use of subcutaneous injections of its various preparations. In not a few instances sloughing has followed its use. The continued use of the active principle of this gland in animals has unquestionably induced degeneration of the walls of the arteries. This is a point to be kept in mind when this agent is frequently employed in human beings.

The number of the diseases beneficially affected by the Roentgen ray therapy has not received any material increase; on the other hand the field of usefulness formerly claimed for it has been much restricted.

During the year the tendency to use large doses of antitoxin in diphtheria has become more manifest. A most important advance in this connection is the confirmation of the value of antitoxin in postdiphtheritic paralysis, even though the patient has already received antitoxin. The intravenous use of this agent does not seem to have found favor, although there are cases in which it is worthy of trial. The diphtheria antitoxin has been used for well nigh all disorders from acute articular rheumatism to cerebrospinal fever and competent observers have reported good results from its use in most of them. Whatever good effects that may have followed its use were due to an inherent immunity possessed by the horse before the diphtheria toxin was administered. Later observations do not warrant any hope from its use in cerebrospinal fever. As a prophylactic agent antitetanic serum may be regarded as a specific. In up-to-date hospitals its use in all cases of punctured wounds has become a routine practice. This is especially the case with blank cartridge wounds, and the number of cases of tetanus have markedly diminished. When the disease has begun the injections of the serum into the motor nerves, spinal canal and brain, offer the only hope. For a long time the use of the antistreptococcus has been regarded in the light of an experiment. There is reason to believe that the use of polyvalent sera has been followed by marked results. The field of usefulness is much like that of antitetanic serum, in that it acts better as a prophylactic in suspicious cases than as a curative agent after the establishment of the serum disease.

No confirmation of Behring's antitubercle era has been reported. Hoffa, of Berlin, in the *Revue de Thérapeutique* speaks very encouragingly of the use of Mar-morek's antitubercular serum in cases of bone and joint tuberculosis. He reports a series of thirty cases wherein the use *per rectum* of large doses of this serum has been followed by unmistakably good results.

On many occasions the word has gone forth from this Section that a more systematic study of our native plants would enormously enrich our medical armamentarium. If one-half of the energy that is daily put forth

to discover some new coal tar product were employed to test our native plants and to extract their active principles, I am sure far more permanent results would be obtained. Why should there not be other plants growing about us, that will do for other organs what digitalis does for the heart and what quinin does for malaria? Coal tar derivatives have never cured disease. In every case their effects are but temporary. The reason of this present skepticism of the profession toward our native materia medica, is doubtless due, in a measure, to the senseless claims made by earlier inexperienced and too often uneducated physicians and laymen, claims which were found to be preposterous. If it were found that the agent did not benefit the disease as it was claimed to do, it rapidly fell into oblivion. This is not the method of the ultrascientific staff pushing a new coal tar derivative. They keep on trying it for everything and finally it may become a well recognized agent, useful for an entirely different affection from that which its originators intended.

#### THE PHARMACOPEIA.

The past year has witnessed the launching of a number of pharmacopeias. Those of European countries, as well as our own, have in the main, adopted the principles laid down in 1902 by the Brussels Conference. This has resulted in a uniform standard of strength and character for most medicinal agents throughout the civilized world. In this country hitherto, the appearance of a new edition of the Pharmacopeia has excited little notice on the part of the profession. A few college professors felt obliged to keep abreast of its teachings, but the general body of the profession had come to view it as being essentially a druggist's book. This year the condition is vastly different. The few changes that have been made in the strength of some of the well-known drugs have attracted the attention of the rank and file of the profession and there is a constant demand for instruction on the rules, changes and suggestions contained in the new work. Probably the most far-reaching result of the new edition is the establishment of the so-called purity rubric, whereby all articles which bear such a standard are restricted in their absolute purity without necessarily criticising minutely as to what the fraction of a per cent. claims to be. Such rubric gives all of the courts of our country a standard which they have long plead for to base their findings on and lends more protection to the public than a casual observer can realize. It is now believed that more frequent revisions of the pharmacopeia are necessary and it seems to me that the time has come when the American Medical Association should take a hand in this work. With our Council on Pharmacy and Chemistry, with a laboratory force, and with a journal as a mouthpiece of the entire profession, we are better equipped for the work of revision than any body which could possibly be selected as the Pharmacopeial Conventions have been in the past. Far from having any intention to impugn the work of the committee on revision, than which a better never existed, it is my belief that if the medical staff of the committee were selected by this Association and the pharmaceutical and chemical staffs by the national chemical and pharmaceutical associations, the revision would more nearly be an expression of current medical usage. As it is many agents have been retained that are not in general use, while others much used have been omitted. A national organization is eminently fitted to find out such facts and to give the book a national character.

#### THE CAMPAIGN AGAINST NOSTRUMS.

Of all advances in therapeutics during the year, none is more noteworthy, none will be more lasting to the whole art of therapeutics, than the war against nostrums and semi-secret preparations. It is safe to say that the campaign which has been waged by THE JOURNAL of this Association for the past two years and by various lay periodicals during the past year, has made thousands of physicians turn to the writing of pharmacopeial prescriptions rather than prescribing some confessedly secret prescription or proprietary, which often amounts to the same thing. This is distinctly a therapeutic advance and as it is potential for further growth it is all the more commendable. Many of the waves of moral upheaval which have characterized the past year in the different spheres, will doubtless recede as they have done before, but with this matter there can be no backsliding. The establishing of the Council on Pharmacy and Chemistry marks a pillar which as a permanent institution will always hold a beacon light to show the difference between the true and the false. Next to THE JOURNAL, it is the most valuable asset of the organization, and it is hoped that its work will be brought to the door of every practitioner of this country free of cost, whether he be a member of the organization or not.

#### WHY PROPRIETARIES ARE POPULAR.

It is not my intention to discuss the ethical and non-ethical proprietaries; others have done that more exhaustively than we have time to do here. It seems to me that the chief reason for the use of the proprietaries is not that they contain any wonderful medicinal agent or combination of agents, but that they do present disagreeable tasting medicines of more or less value in a palatable form. We may say that it is a small matter, that the relief of distress and the cure of disease are our chief objects, but the present generation is a generation of sensitive stomachs and sensitive nervous systems, and the small things such as a disagreeable potion are to them a major affair and in many instances cause more discomfort than the disease, hence the vogue of homeopathy among the well-to-do. For instance, scarcely any one really believes that the modern organic iron preparations are intrinsically better than the old pharmacopeial inorganic salts, but it is the general belief founded on experience that, as furnished by the manufacturers, they do not disturb the stomach and are not repellent to the taste. I might mention many other similar instances. This brings the matter squarely up to the medical schools as far as the next classes of graduates are concerned. For those in practice it is no new advice to tell them to study pleasant combinations. By asking the advice of competent druggists many improvements in the routine prescriptions can be suggested. This must be a matter of individual education.

In some instances it seems that it might be a good plan to fill in the active ingredients of the prescription, quantity and dosage, and then to state that the druggist can use his own skill in making it palatable by the addition of flavors, etc. Such additions should then be incorporated in the prescription. In this way the druggist will take some pride in filling prescriptions and the more skillful he becomes the more patronage he will receive and thus he will be compensated.

#### THE DRUGGIST AND THE PHYSICIAN.

Another plan for educating the profession individually is that pursued by the druggists' association in several parts of the country. Circulars explaining the

palatable prescriptions of the Pharmacopeia and of the National Formulary are sent monthly to all physicians in the neighborhood. The profession has generally been skeptical as to the ability of the retail druggist to make elegant and palatable preparations, and this notion has been fostered by the various proprietary agents. This was all too true of the slovenly druggist of a decade ago. To overcome this prejudice some of these up-to-date druggist associations before mentioned have followed the example of the detail men of the proprietary firms and are sending neighboring physicians small samples of the pharmacopeial articles as dispensed by them. These are in every instance the equal in quality, taste and appearance of any similar proprietary. Many physicians may not relish such instruction offered by the pharmacist, but it is a thousand per cent. superior to that dispensed by the average detail man. In a number of cities joint meetings of the local druggists and physicians have taken place and as a result a better feeling has been engendered.

This Section forms a link, as it were, between the druggist and the physician, and we hope in the future that closer relations may be maintained with the national pharmaceutical society. Plato's dictum that great questions are only to be decided by compromise holds good for this matter of the proprietaries. Some features of the proprietary trade must remain; others must go. Out of the present clash of interests and theories certain well-defined principles will be evolved that will form a basis for a newer science of therapeutics.

### Original Articles

#### HEALTH INSPECTION AS APPLIED TO THE INDIVIDUAL.\*

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The care of the health, when it comes to a discussion of its restoration when it has been lost, is a very old topic. Health inspection, as a wholesale proposition, as applied to communities, states and countries marks in its development perhaps the greatest advance in the application of science to human welfare. As applied to the individual, it still lags far behind what it ought to be.

Hundreds of lives are lost every year, and thousands of days of disability incurred because it is not the custom for the health of the individual to be the subject of inspection in such a manner as to detect and remedy disease in its beginning.

The life insurance examination which, of course, is only applied to relatively few individuals, reveals a surprisingly large amount of unsuspected disease.

Every individual should be thoroughly inspected from time to time by a physician applying the resources of a complete physical examination, with chemical and microscopic observation of all obtainable secretions, in order to ascertain the standard of health of the individual.

No one would think of running a complicated machine without an annual inspection and overhauling of those slight defects which, if neglected, lead to a serious breakdown.

Each generation as it advances through decades considers itself an exception to the one that preceded, and

no one accepts the penalty of advancing age until it is thrust on him. The laboratory would inevitably reveal the necessity for attention to diet years before incurable physical penalties had been uncured.

Such an examination to be of value must be very technical in its nature.

Patients naturally seek the physician for disordered conditions that are sufficiently obvious to attract their attention.

The observations necessary to determine the standard of health of the individual in the absence of evident disease are so technical, consume so much time, and require so much manual dexterity, that the examinations themselves must usually be made by young physicians whose attention can be devoted chiefly to these things. But the young physician is unable to judge of the relative importance of the very technical details which he is specially capable of discovering. For this reason, the general practitioner, or as he has come to be called, in these days, the private practitioner, should have his practice so organized as to obtain the assistance of younger men who have fresh skill and enthusiasm with regard to the technicalities of physiologic observation. Comparatively few men have reached the point of such an organization for themselves alone. Some of us have brought this about by the establishment of a coöperative clinical laboratory, where the younger men who are fresh in all the technicalities of chemical and microscopic research do the work of older men, who are in actual practice.

Such a laboratory must be under the direction, more particularly of one man or a committee, but so long as it is purely coöperative in spirit, in that everything is done for the interest of those who come into the arrangement, and so long as the laboratory remains a place where actual practitioners meet to discuss technicalities with the younger men, and the significance of things with their fellows, it will tend to make clinical pathology a practical matter to actual practitioners. It is by means of such an organization that we may arrange our clientèle so that the continuous observation of each individual, while in apparent health may lead to the early detection of disease. The number of people who are willing to submit to this system is, unfortunately, comparatively small, but when its advantages are once clearly understood the number ought to be larger.

The individual must be trained to employ his physician to watch his physiologic processes in the same way as the public has come to expect the medical profession to watch over the health of the community.

Every person should possess a record of his physiologic standards and peculiarities for reference in case of suspected disease.

The united profession can work for the wholesale care of the people, while it is very hard for an individual physician to approach an individual citizen with a proposition for continuous care. This must be brought about by gradual education.

#### DISCUSSION.

DR. S. A. KNOFF, New York, said that Dr. Bishop had outlined the ideal future life of the average American citizen. He will have his own private family physician; if he can afford to pay for it, all right; if not, the municipality will pay for it. Dr. Knopf commended Dr. Bishop's ideas about the necessity of periodic examination of the average individual, particularly those predisposed to disease. Dr. Knopf said that in the tuberculosis crusade he has emphasized this point particularly in families predisposed to tuberculosis. If we wish to combat tuberculosis as a family disease, in the schools,

\* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.