spite of this, the attitude of certain otherwise estimable publications seems to be that taken by the *Christian Herald*, for example, of New York, which, after having the facts brought to its attention by a physician, wrote:

"We shall continue to carry this advertisement as we are convinced that the system advocated by Dr. Tyrrell is of far greater benefit to the public at large than the medicines prescribed by the average physician."

Summarized, the objections to the exploitation of the J. B. L. Cascade Treatment may be stated thus:

1.—The key-note of Tyrrell's campaign is his alleged theory that "there is only one disease" and that "there is only one cause for disease" and that cause "is auto-intoxication produced by intestinal obstruction." The falsity of these statements and absurdity of the theory are obvious.

2.—A supplementary feature of Tyrrell's "treatment" is the "J. B. L. Antiseptic Tonic," which, it is insisted, is "one of the most important features of the treatment." The "Antiseptic Tonic" is a secret nostrum sold under ridiculously exaggerated claims at an enormously high price. Analysis shows it to consist essentially of a mixture of common salt and borax worth probably two-thirds of 1 cent and sold for half a dollar.

3.—The administration of rectal enemas by means of the J. B. L. Cascade is not only unscientific, but may in many cases be dangerous. The common fountain syringe is both safer and more efficient.

4.—Tyrrell urges the public to take rectal enemas both in sickness and in health—in other words, as a routine part of one's living. This advice is mischievous to the point of viciousness.

5.—Tyrrell misleads the public into believing that prominent and distinguished physicians have approved of and testified to his "treatment." The facts are that not one of the physicians named can, by the widest stretch of imagination, be called prominent and distinguished.

6.—The J. B. L. Cascade is advertised as a veritable cure-all. It is claimed that used in sickness any curable disease may be cured; used in health all disease will be prevented!

Correspondence

Lister on the Use of Animals in Research

To the Editor:—The following letter was found among Lord Lister's papers by his nephew, Sir Rickman J. Godlee (ex-president of the Royal College of Surgeons, England), who is about to publish the authorized Life of Lord Lister. I have his kind permission to publish the letter. It is a signed holograph letter evidently written and revised with unusual care, for there are many changes and corrections in it. It was also evidently copied, for "a line is drawn over it as it was copied," as Sir Rickman informs me. The envelope is endorsed "Rough draft of a letter to Dr. Keen." No copy of the letter ever reached me. Presumably it went astray in the mail. It is of especial interest as showing Lister's deep convictions and personal experience.

W. W. KEEN, M.D., Philadelphia.

12 Park Crescent, Portland Place, London, W.

4 April 1898.

My dear Sir:—I am grieved to learn that there should be even a remote chance of the legislature of any state in the Union passing a bill for regulating experiments upon animals.

It is only comparatively recently in the world's history that the gross darkness of empiricism has given place to more and more scientific practice, and this result has been mainly due to experiments upon living animals. It was to these that Harvey was in large measure indebted for the fundamental discovery of the circulation of the blood, and the great American triumph of general anesthesia was greatly promoted by them. Advancing knowledge has shown more and more that the bodies of the lower animals are essentially similar to our own in their intimate structure and functions, so that lessons learnt from them may be applied to human pathology and treatment. If we neglect to avail ourselves of this means of acquiring increased acquaintance with the working of that marvelously complex machine, the animal body, we must either be content to remain at an absolute standstill, or return to the fearful haphazard ways of testing new remedies upon human patients in the first instance which prevailed in the dark ages.

Never was there a time when the advantages that may accrue to man from investigations on the lower animals were more conspicuous than now. The enormous advances that have been made in our knowledge of the nature and treatment of disease of late years have been essentially due to work of this kind.

The importance of such investigations was fully recognized by the commissioners on whose report the act of Parliament regulating experiments on animals in this country was passed, their object in recommending legislation being only to prevent possible abuse.

In reality, as one of the commissioners, the late Mr. Erichsen, informed me, no single instance of such abuse having occurred in the British Islands had been brought before them at the time when I gave my evidence, and that was toward the close of their sittings.

Yet in obedience to a popular outcry, the government of the day passed an act which went much further than the recommendation of the commissioners. They had advised that the operation of the law should be restricted to experiments upon warm-blooded animals; but when the bill was considered in the House of Commons, a member who was greatly respected as a politician, but entirely ignorant of the subject matter, suggested that "vertebrate" should be substituted for "warm-blooded," and this amendment was accepted by a majority as ignorant as himself.

The result is that, incredible as it may seem, any one would now be liable to criminal prosecution in this country who should observe the circulation of the blood in a frog's foot under the microscope without having obtained a license for the experiment and unless he performed it in a specially licensed place.

It can readily be understood that such restrictions must seriously interfere with legitimate researches.

Indeed, for the private practitioner they are almost prohibitive; and no one can tell how much valuable work is thus prevented.

My own first investigations of any importance were a study of the process of inflammation in the transparent web of the frog's foot. The experiments were very numerous, and were performed at all hours of the day at my own house. I was then a young unknown practitioner; and if the present law had been in existence, it might have been difficult for me to obtain the requisite licenses: even if I had got them it would have been impossible for me to have gone to a public laboratory to work. Yet without these early researches which the existing law would have prevented, I could not have found my way among the perplexing difficulties which beset me in developing the antiseptic system of treatment in surgery.

In the course of my antiseptic work, at a later period, I frequently had recourse to experiments on animals. One of these occurs to me which yielded particularly valuable results but which I certainly should not have done if the present law had been in force. It had reference to the behavior of a thread composed of animal tissue applied antiseptically for tying an arterial trunk. I had prepared a ligature of such material at a house where I was spending a few days at a distance from home; and it occurred to me to test it upon the carotid artery of a calf. Acting on the spur of the moment, I procured the needful animal at a neighboring market; a lay friend gave chloroform, and another assisted at the operation. Four weeks later the calf was killed and its neck was sent to me. On my dissecting it, the beautiful truth was revealed that the dead material of the thread, instead of being thrown off by suppuration, had been replaced under the new aseptic conditions by a firm ring of living fibrous tissue, the old dangers of such an operation being completely obviated.

I have referred thus to my personal experience because asked to do so; and these examples are perhaps sufficient to illustrate the impediments which the existing law places in the way of research by medical men engaged in practice whose ideas, if developed, would often be the most fruitful in beneficent results.

But even those who are specialists in physiology or pathology and have ready access to research laboratories find their work seriously hampered by the necessity of applying for licenses for all investigations and the difficulty and delay often encountered in obtaining them.

Our law on this subject should never have been passed and ought to be repealed. It serves no good purpose and interferes seriously with enquiries which are of paramount importance to mankind.

Believe me

Sincerely yours,

LISTER.

Toxicity of Salvarsan

To the Editor:—The cases here reported seem more serious than those recently reported by Ormsby and Mitchell, and Ellis (*THE JOURNAL*, Dec. 9, 1916, p. 1756). Our technic has always been carefully controlled, and we follow the procedure recommended by the manufacturer. No ill effects have come to our patients previous to the use of the last two packages of ampules shipped us from New York. Out of the last twenty-three injections of neosalvarsan we have had four cases of severe poisoning and one death.

In the first case, a woman, aged 21, was given 0.6 gm. neosalvarsan; during the injection she suffered intense pain in the extremities and a sensation of choking; two hours later she had repeated convulsions, vomited blood, and had a bowel movement every half hour; the abdominal pain was intense; the pulse, 150; temperature, 104; this continued for forty-eight hours, after which she gradually recovered.