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THE IMPROVEMENT OF JUSTICE WITH THE AID OF SCIENCE AND EXPERT WITNESSES

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I

Just as knowledge is dependent upon qualities of the object and the observer, so also law is a product of the real and ideal, object and subject, facts and legal mechanisms. For that reason law, as knowledge, is relative and characterized by variety, ambiguity, uncertainty and conflict.

Its doctrines are realistic, objective and factual because they evolve from decided cases and do not determine them and are conditioned, therefore, by fact structures in ever-changing and novel relationships presented for decision.¹ No two fact situations are equivalent, so that there can be no more identity in legal relationship than in the flowing space-time world of modern physics.

Legal precepts are also idealistic and subjective because they are the end product of the passage of facts through the legal mechanisms of trial and judicial review. The layman and judge modify the relationship of facts by superimposed notions of justice. Thus the law to be declared is dependent in its future utterance (and what we think it will be is the only law that matters) upon the unpredictable reasoning, experiences and emotions of jurors and judges. Fallacy, bias and distortion color the result. It must be plain that these idealistic and subjective phases of the law's evolution may not be improved upon any truly scientific basis, and do not concern us in this paper. Justice from these sources must be improved by raising the level of the morals of the people, maintaining a judiciary of intelligent, well-trained, morally circumspect and well-paid men, and electing a legislature

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1. This concept of law is expressed in the classic statement of Mr. Justice Holmes that "the life of the law has not been logic; it has been experience," and again that "a page of history is worth a volume of logic." More plainly put by Pollock and Maitland, "The matter of legal science is not an ideal result of ethical or political analysis; it is the actual result of facts of human nature and history." *THE HISTORY OF ENGLISH LAW* xxiii (2nd ed. 1923).

more obedient to its own conscience and the good of the people than to the will of lobbyists and voters.²

Other important cogs in the machinery of decision deal more closely with fact structures than either the legislature, or judges: these are the witnesses, attorneys and jurors. We shall treat only with witnesses, and then with only a small group known as experts. These are the witnesses specially educated, trained or experienced in medicine, engineering, physics, handwriting, trade and like incidents of our life which modern science and enterprise have extended beyond the comprehension of the average juror. They are frequently called to testify and to give opinions upon matters which could not otherwise be known or understood by the jury or judge.

Upon the premise that law evolves from facts, its quality as "correct" or "just" will vary with the quality of facts presented as "correct" or "true." The need thus arises for better preservation, selection, testing, synthesis and presentation or proof of facts.³ Since the organization of knowledge is the aim of science, lawyers and courts should be and are inclined to invoke the aid of science and its men of learning and experience in the process of gathering and presenting facts in court.⁴ Without them we

2. This view of law in dualistic jurisprudence has been well stated by Dr. Hubert W. Smith in his introductory note entitled *Interactions of Law and Science* to the symposia mentioned *infra*, note 3: "The law is both a reflective and reflected science. If there is anything which needs constant renovation it is the law. It needs extrinsic criticism to rescue it from historical errors and the obsolescence brought by time. To maintain its authority in an age of skepticism and science, it must maintain communion with science and, indeed, with all of life." 24 N.C.L.REV. 104, 105 (1946).

3. The following articles by Dr. Hubert W. Smith, M.D., LL.B., indicate the need and possibility of bringing law and science into a closer relationship: *Components of Proof in Legal Proceedings*, 51 YALE L.J. 537 (1942); *The Psychiatrist as a Witness in Civil and Criminal Cases*, 10 JOURNAL OF OMAHA MID-WEST CLINICAL SOCIETY 17 (1949); *Scientific Proof and Relations of Law and Medicine*, 18 ANN. INT. MED. 450 (1943). In 1943 and 1946, Dr. Smith organized and became editor of two symposium series on law-science problems with particular reference to law-medicine problems, published in legal and medical journals throughout the United States.

4. Although medicolegal societies once existed in several of our larger cities, few may now be found, and with one exception, they are local and not national in scope. Within the last ten years and chiefly because of the tireless work of a handful of individuals, interest in improving the relation between law and science has revived. The First American Medicolegal Congress was held in St. Louis in January, 1948. As a result of that meeting the American Academy of Forensic Sciences was formed. An American Board of Legal Medicine was only recently organized. There are now over fifty men in the United States holding degrees in both law and medicine and actively engaged in medicolegal work. Tulane University

would be forced to rely upon the naive, uncritical, superstitious and speculative observations of lay witnesses and jurors. In an ideal system, the scientist and expert witness would be the most honored of men,⁵ and upon the supposition that they deal with immutable laws of the physical world, we would find the jury largely displaced by them.

However, dissatisfaction with courts has bred a host of administrative agencies and tribunals which perform many judicial functions upon the claim that they alone are able to deal with technical subjects comprehensible only to specially trained and expertly advised administrators. Reformers do not stop there. It is currently popular to support some method of limiting the choice of experts to a certified panel or to urge the adoption of some variation of the "Minnesota Plan" under which the legal and medical profession, acting in concert, undertake to maintain surveillance over the practice of their numbers and to discipline them if necessary.⁶ Some suggest that technical aspects of legal controversies be decided by experts after hearing other experts.⁷ In the background are the special interests which for many years have been willing to abolish the jury system in its entirety.

The millennium promised will not withstand critical analysis. It may bring with it a larger and more offensive troupe of abuses than it proposes to banish.

has appointed Dr. Hubert Winston Smith a Research Professor' of Law and Medicine to extend the work which Dr. Smith began at the University of Illinois as Professor of Legal Medicine. In February, 1951, Tulane University presented a Short Course on Legal Medicine and Elements of Medicolegal Litigation over a four day period with almost fifty lecturers from all points in the United States and panel discussions participated in by many lawyers and scientists. Harvard University under the leadership of Dr. Alan R. Moritz has long had a Department of Legal Medicine, and a few other universities have fairly complete courses in forensic sciences or legal medicine.

5. Though Mr. Justice Holmes explained the genesis of law on a historical rather than a logical basis, he felt that "an ideal system of law would draw its postulates and legislative justification from science." HOLMES, *Learning and Science* in SPEECHES BY OLIVER WENDELL HOLMES 68 (1918).

6. HAWKINSON, *The Medical Witness in Court: Expert Testimony* in SYMPOSIUM ON MEDICOLEGAL PROBLEMS (1946); ROEMER, *Abuses of Medical Testimony: A Remedy—The Minnesota Experiment*, *id.* at 17-30; Hammes, *Eight Years' Experience with the Control of Medical Testimony—The Minnesota Plan*, 10 JOURNAL OF THE OMAHA MID-WEST CLINICAL SOCIETY 13 (1949); Hawkinson, *The Pseudo Medical Expert Witness*, 10 JOURNAL OF THE OMAHA MID-WEST CLINICAL SOCIETY 7 (1949).

7. Smith, *The Psychiatrist as a Witness in Civil and Criminal Cases*, 10 JOURNAL OF THE OMAHA MID-WEST CLINICAL SOCIETY 17 (1949).

Thus, and on broad grounds, it may be conceded that the largest repositories of legal uncertainty are those digest key numbers recording decisions wherein the facts submitted, being in dispute, were matters for the jury to decide, and whether the evidentiary facts adduced established the ultimate facts necessary to a cause or defense were questions for the jury and within its exclusive province to weigh and determine. A general verdict arrived at behind locked doors may not have been returned after a finding of the requisite facts. The perfectionist finds this unsatisfactory because it is possible that extraneous factors influenced the verdict. But what would be gained by dismissing the jury, replacing it with other human beings with human tendencies to err and airing a wordy consideration of issues, the resolution of which will still be in locked chambers, the corridors of the mind? Moreover, the jury does reach a result and its methods, though unscientific, are gracefully simple. It decides controversies without delay. Can judges and administrative agencies claim as much?⁸

For another matter, the more scientific, complicated and particular each trial becomes the further the court will withdraw from stating broad doctrines, or any at all, useful in shaping future action either of laymen or lower courts bound to follow controlling decisions. Without those doctrines, each judicial opinion isolates itself and promises nothing. It neither instructs nor offers guidance. It ignores precedent derived from the past, furnishes no precedent for the future, and merely decides border disputes of armed antagonists poised for future conflict. The only certainty is that the more numerous and scientific and complicated the facts become the more inclined the courts have been

8. A simple example is the case of *Stephens v. Spuck Iron & Foundry Co.*, 358 Mo. 372, 214 S.W.2d 534 (1948), a workmen's compensation case arising out of an accidental death on November 20, 1946. There was a hearing before a referee, a review upon the record by the Industrial Commission, a further review in the circuit court and a final review "on the whole record" in the Missouri Supreme Court under MO. CONST. ART. V, §22. The award was paid in December, 1948.

Some nisi prius judges are notoriously slow in handing down rulings in jury-waived and equity cases or in deciding motions. Some such cases in Missouri are still under submission in the circuit courts after almost two years. The Missouri Code compelling a ruling within 90 days after filing a motion for new trial cuts at only part of the evil. On the other hand, appellate courts in Missouri are current with their dockets, chiefly because those courts recognize that justice delayed is justice denied.

to decide issues as a matter of law and without assistance from the jury.

Moreover, science, though pretending otherwise, still labors at an infantile level. Although the relativity theory, organismic biology, Gestalt psychology, psychosomatic medicine and social economics have made some slight progress in increasing our understanding of entire relationships, much of science still demands autonomy and isolability, either rejecting or uninterested in interdependence and functional relationship with other sciences, law and life as a whole. Science still tends to ever-narrowing specialties, and more complex and unintelligible symbols, words and phrases. Instead of reaching simple, irreducible elements it finds more variety, diversity and novelty. The deeper it penetrates into the mysteries of reality, the more complicated become its methods, the more uncertain and conditional become its results, the more incomprehensible are its explanations, and the less useful and practical, then, it is to other sciences or laymen who would use it.

There are other and even more practical reasons for hesitating to rewire present systems with too much of science and justice short-circuited through panels of experts. The scientist cannot surrender his membership in the human race. He often sacrifices breadth of understanding in his devotion to science. Some of the most bigotted, narrow-minded, emotionally unstable and selfish of men are to be found in hospitals and laboratories. The quack and charlatan are often the most respected of men in their own professions; how can courts be expected to detect their true natures? Before science be intruded too far into the legal process, we must have some better methods than those now in use to protect courts from these persons. Reflection will demonstrate our present inadequacy to cope with a lying expert witness.

To begin with, it will be recalled that under our system of submitting disputed facts to the jury, no witness may give his opinion upon any ultimate fact in issue or upon any evidentiary fact which the jury is equally capable of finding. Out of necessity opinion evidence and expert witnesses are exceptions to the rule.⁹ The chief characteristic and function of expert witnesses

9. *Cf.* *Cole v. Uhlmann Grain Co.*, 340 Mo. 277, 295, 100 S.W.2d 311, 321 (1936).

lies in the expression of an opinion upon ultimate facts in issue, thus invading a province traditionally reserved for the jury. To that extent he is both witness and juror.

There is little, if any, protection against perjury by an expert. The four ordinary barriers to that serious crime are the oath, cross-examination, jury and trial judge. None of these is fully capable of coping with perjury of an expert. Criminal convictions for perjury are difficult enough to obtain in even the most flagrant of cases where a witness, either expert or lay, has falsely stated a fact. It is almost impossible to prove beyond a reasonable doubt that a witness has knowingly sworn falsely to his opinion about a matter. The expert has nothing to fear from criminal prosecution for violation of his oath.

The cross-examiner, the jury and the trial judge are greatly handicapped in testing the credibility of experts and the weight to be given to their evidence. Most of the skilled witnesses encountered in courts qualify by graduation from some university offering professional training and by membership in various societies and associations of his professional colleagues. In a sense this is a representation that the university and those societies have vouched not only for the accuracy of his statements but for his personal integrity as well. An assault upon him is reproach to them. Yet few professional schools are interested in the relation of law to their specialties. Standards of professional ethics treat with individual relationships and not with morals or any duty to society. Few professional societies or associations deal seriously with the personal morality of their members.

The trial judge has little power, and that is seldom exercised, to declare an expert incompetent as a matter of law.¹⁰ Almost anyone with a title or a diploma or "experience" may pass himself off as an expert. Once the testimony is admitted the jury must appraise it, and the jury may easily be misled by pseudo-

10. Although it is often said that the trial judge has wide discretion in passing upon the qualifications of an expert and that such discretion will not be interfered with on appeal unless grossly abused (*Stephens v. Kansas City Gas Co.*, 354 Mo. 835, 848, 191 S.W.2d 601, 606 (1946)), the practical effect of that rule is to permit trial judges to let almost anyone qualify as an expert. In the West Digest System under Evidence, key numbers 535 to 546, it is rare to find a case in which one attempting to qualify as an expert was either rejected as unqualified in the lower court or so ruled on appeal.

scientific jargon, esoteric nonsense, professional hocus-pocus and polysyllabic mumbo-jumbo. The lawyer has the right to force the witness to give the facts and reasons upon which his opinions are based, but even a well-prepared lawyer does not dare to pursue the expert too far into his jungle of learning. He may be hopelessly enmeshed in details of no real consequence whose significance is unknown to the jury. The result is a jaded, restless panel and either an incomplete examination or one wholly lost upon its hearers.

Moreover, the sooths these experts say are, supposedly, scientific facts, the product of experience and experiments, truths developed by empirical methods and not revealed by the faulty mechanisms of *a priori* reasoning. The materialistic philosophy of our scientific age fosters more faith in machines than in men.¹¹ A scientific fact stated by an expert may be given more credence than the solemn oath of a layman that such was not the fact.

For all of these reasons, abuses have abounded in the use of opinion evidence. Experts are hired on a fee basis, and their opinions, consciously or unconsciously, may be influenced by the source of their remuneration. Their conclusions are preformed and foregone; no one at the trial ever knows how many unfavorable experts were consulted before the one willing witness was found. They appear to testify in many cases where direct evidence is available and their testimony is unnecessary. Their opinions are often based upon facts assumed in a hypothetical question, itself an instrument of dubious value and subject to much abuse. In court they are more frequently eager, disputatious advocates than reserved men of science. Much of their evidence is uncertain, problematical and conjectural. They are seldom inclined to reveal both sides of a controversial matter or facts unfavorable to their employer or to admit any error of their own. Most of them feel specially licensed to swear to opinions which they would not dare expound before their brethren at meetings of their professional societies. Equal numbers may be employed on

11. Herbert Dingle, a leading British astrophysicist, admitted some years ago that ". . . The criterion for distinguishing sense from nonsense has to a large extent been lost; our minds are ready to tolerate any statement, no matter how ridiculous it obviously is, if only it comes from a man of repute and is accompanied by an array of mathematical symbols. . . . If this state of mind exists among men of science, what will be the state of mind of a public taught to measure the value of an idea in terms of its incomprehensibility?"

either side to reach directly contrary results from the same set of facts. In the very next case they may be found to have exchanged theories and sides of a dispute. A strong suspicion arises that the sources of their fees are the sole explanations of their divergence of opinion.

All of these considerations have caused courts and legal commentators of the highest eminence to regard expert evidence with much distrust, to receive it with much caution, to subject it to narrow scrutiny, and to accord it very little weight as compared to other types of evidence.¹²

II

After the lawyer ruminates a while about the troublesome problem of finding some working arrangement whereby law and science may join in developing scientific jurisprudence, he turns again to the practical problem of using existing methods of handling expert witnesses and opinion evidence in the trial of cases then in the file cabinet. So much of that as we now consider may, solely for convenience, be confined to those causes of action known as the personal injury suit and the workman's compensation claim. For here there are millions of dollars that pass annually from insurance companies and utilities to the injured claimant.

It is important to view expert evidence in its proper perspective in our judicial system and to consider it as a related, rather than an isolated, part of that process. In a personal injury case the lawyer must begin and end with a clear understanding of the cause of action, the facts and witnesses necessary to establish or defeat it, the nature, character and extent of the injuries and damages, their causal relation to the act of culpability and the probability or improbability of a recovery at law. These initial and key factors in this type of a case follow it at every step and turn and furnish the central issues which to some extent shape all action in the case.

The medical witness is a logical, though not always indispensable, actor in the sequence of events from the first reception of a client to his satisfied final departure. Thus, he may have

12. 20 AM. JUR. 1058-1059 (1939); 32 C.J.S. 393-394, 473-74 (1942); 3 JONES, EVIDENCE, 2391-2393, 2509-2512 (2nd ed. 1926). See: Notes, 12 L.R.A. 457 (1891); 62 L.R.A. 871 (1904).

only furnished the bandages and a report. But even here he is at least a potential witness to the facts even if he is only a general practitioner without a definite diagnosis or opinion as to causal relation to trauma or the permanency of the injury.

Necessarily there are certain special rules for the qualification and examination of medical experts. Whether a witness is qualified as an expert is a question of law for the court, not for the jury, and is usually one within the court's discretion to decide.¹³ Practical, and not legal, problems are presented to the attorney in choosing his expert. In many cases two types of medical witnesses are called: the treating physician and the expert who has made an examination or attends trial chiefly to render an opinion by report or testimony.

Examination of the treating physician in court will proceed along the same line as examination of the expert who has examined solely for the purpose of testifying. In fact, it is well to reiterate and remember that the expert witness does not differ from the ordinary lay witness with one important exception: experts may give opinions and conclusions in evidence and thus, for the time, invade the jury's province by testifying to an ultimate fact in issue, whereas the lay witness may not do so.

In the case of an expert employed by an attorney to give an opinion by report or testimony or both, there is usually some anti-selection against the other litigant. In almost every large city, lawyers classify these experts as "plaintiffs' doctors" and "defendants' doctors," according to that side of these controversies upon which they most frequently appear. Many physicians who examine for insurance companies will refuse to accept employment by a plaintiff's attorney. There is not much difference between the findings of these two classes of experts, but their opinions usually differ, and often quite widely, upon the cause and permanency of the injury and the percentage of disability in workmen's compensation cases where such a rating is requested or permitted by the commission.¹⁴

13. *Oliver v. City of Vandalia*, 28 S.W.2d 1044, 1045 (Mo.App. 1930). See note 6 *supra*. Footnotes in this section of the paper are desultory, incomplete, confined mostly to Missouri cases and merely illustrative of hornbook law.

14. It is not unusual in workmen's compensation cases, where a percentage rating of disability is required by the commission in order to render an award, to find estimates in the same case ranging from 5% to 50% disability or more. The commission often takes an average or quotient

The "plaintiff's doctor" may become a partisan in the case by referring the plaintiff to a lawyer, or because of an unpaid bill or because of a natural interest in his patient. Such matters suggest fields for cross-examination and oral argument. The "defendant's doctor" may develop an interest or bias about which he may be cross-examined for the obvious reason that he has been selected by the employer or insurer, and a substantial part of his livelihood may be dependent upon the continuation of a favorable relationship and a satisfied client.

Some attorneys probe the medical witness with questions about the frequency of their appearance in court, whether then for plaintiff or defendant, how often in cases of the opposing attorney and the amount of their charges for testifying. However, where the defendant's attorney does so he exposes his flank to similar questions by the plaintiff's attorney. Most experienced trial attorneys avoid these questions since the jury is seldom impressed with such questions going to interest or bias because of the awe and respect customarily accorded to any physician by a layman. Moreover, many jurors believe that it is a mark of honor that a physician is chosen to participate with lawyers and jurors in the solution of legal controversies.

Whether in direct or cross-examination, there will usually be the same general plan and scope of questioning of medical witnesses. To understand that plan the expert may generally be considered in his four relations to our judicial system: (1) his relation to his own profession; *i.e.*, his qualifications; (2) his relation to the attorney in the case; *i.e.*, the manner of his employment; (3) his relation to the party for whom he is testifying; and (4) his relation to his own oath, his powers of reasoning and the facts in the case.

Inquiry concerning qualification goes to the witness' competency and establishes whether and to what extent he is an expert. Of what school is he a graduate? When? Did he take any special courses or training after graduation? Has he experience in general practice? Is he a specialist? Is he on the staff of local hospitals? Has he done any teaching? To what medical societies does he belong? All of these questions go to the admissibility of

upon the assumption, perhaps, that the witnesses were biased. As a result the medical experts tend to widen and not close the gap between their estimates in subsequent cases.

his opinions and the weight of his evidence, and are the important preliminary subjects of interrogation.

The next series of questions deals with the occasion for his examination of the plaintiff, and thus may reveal his connection with the attorney or party for whom he is testifying. At the same time inquiry is made concerning the frequency and times of his examination of the patient, thus demonstrating his opportunity to know the facts which he relates.

Every doctor takes a history from the patient covering the time and manner of his injury, the time of appearance and nature of symptoms, the type and frequency of treatment, the existence or non-existence of disease or former injuries which may account for the symptoms and the nature of present complaints. Although all of this information is necessary for a diagnosis and opinion, none of it, except complaints at the time of examination, is admissible in favor of the patient because it is hearsay, although any of it may be admissible against him as an admission against interest.¹⁵

With one exception, the remaining testimony of the expert will be governed by general rules applicable to all witnesses. That exception relates to the hypothetical question, a cumbersome device fashioned for the sole purpose of eliciting an opinion and thus peculiar to the testimony of experts. Where possible, such questions in their usual long, argumentative form should be avoided.¹⁶ As a general rule, this question should assume sufficient facts upon which the witness may base an intelligent opinion.¹⁷ Some facts necessary for an answer may be gleaned from the expert's own knowledge, but the jury is entitled to know what facts are relied upon by the witness in answering.¹⁸ The question should be so framed as to reflect the theory of the party propounding it, as shown by facts proved, admitted or to be

15. *Evans v. Mo. Pac. R. Co.*, 342 Mo. 420, 116 S.W.2d 8 (1937). There is no distinction between the treating physician and one who examines solely for the purpose of testifying. *Baunhoer v. McLaughlin*, 205 S.W.2d 274, 280 (Mo.App. 1947).

16. In the *Tuckerman* will contest in Ohio a psychiatrist was asked a hypothetical question concerning the testator's sanity. The question contained 20,000 words and required three hours to read. The witness answered "I don't know." See: 5 Ohio L. Rep. 45 (1907). The case is noteworthy not only for the length of the question but also as probably the only one in which an expert confessed his inability to answer.

17. *Roberts v. Woodmen Acc. Co.*, 233 Mo.App. 1058, 1065, 129 S.W.2d 1053, 1056 (1939).

18. *Adams v. Carlo*, 101 S.W.2d 753, 758 (Mo.App. 1937).

later shown in evidence.¹⁹ It must contain sufficient facts to afford ground for a reasonable conclusion.²⁰ It should contain a full and fair recital of all relevant facts bearing on the theory presented by the questioner,²¹ but it need not embrace the contentions of one's opponent on disputed matters,²² and should not include the opinions of another expert.²³

The answers of an expert, where they involve opinions, must have a sufficient predicate in evidence of his own examination and must be responsive.²⁴ They should be definite expressions of opinion and must not be speculative.²⁵ If they relate to causal connection or future consequences, such results must be reasonably certain to appear, probabilities, and not mere possibilities.²⁶ Without that certainty the opinion is inadmissible. That is not to say that statements of mere possibility may not be received in evidence where preceded or followed by other evidence from which the jury may determine the reasonable certainty of a result.²⁷ It is always proper for an expert to give the reasons for his opinions, but in doing so he may not bring in matters not properly admissible in evidence and should be confined to the case at hand without rambling off into a similar case within the doctor's knowledge.²⁸

The manner, scope and extent of cross-examination is largely within the control of the trial judge and subject to his discre-

19 *Evans v. Partlow*, 322 Mo. 11, 25, 16 S.W.2d 212, 217 (1929).

20. *Bennett v. Punton Sanitarium Ass'n.*, 213 Mo.App. 363, 379, 249 S.W. 666, 672 (1923).

21. *Dillard v. East St. Louis Ry. Co.*, 150 S.W.2d 552, 556 (Mo.App. 1941).

22. *Zeller v. Wolff-Wilson Drug Co.*, 51 S.W.2d 881, 884 (Mo.App. 1932).

23. *Aronovitz v. Arky*, 219 S.W. 620, 623 (Mo.App. 1920).

24. *Lehman v. Knott*, 100 Ore. 59, 70, 196 Pac. 476, 479 (1921).

25. The answer should be definite and unequivocal and not hedged by phrases such as "I think" or "I guess" or "I imagine." Conjecture is not opinion. *Floyd v. McDonald Mfg. Co.*, 226 Mo.App. 444, 451, 46 S.W.2d 251, 255 (1932).

26. In some cases even probabilities will not suffice. In the leading case of *Kimmie v. Terminal R.R. Ass'n. of St. Louis*, 334 Mo. 596, 605, 66 S.W.2d 561, 564 (1933), where the causal relation between trauma and a cancer was involved, the court said that "even a positive opinion must have to support it reasons and testimony which will give sufficient probative force to be substantial evidence."

27. *Ibid.*

28. *Mutual Life Ins. Co. of N.Y. v. Savage*, 31 F.2d 35 (5th Cir. 1929), *Gulf, W. & P. R. Co. v. Abbott*, 146 S.W. 1078 (Tex. Civ. App. 1912. How can you cross-examine a witness or test his credibility upon some other case he had in which a similar result ensued? This dodge is the favorite retreat of a witness without reasons to support his opinions.

tion.²⁹ Although the hypothetical question presented to the expert may be rephrased to include additional facts upon which the cross-examiner relies or to exclude facts which his theory of the case rejects, it is seldom a satisfactory method of cross-examination. Better tests of opinion evidence are to show that inferences or opinions are based upon facts not proved, facts inaccurately or incompletely observed, a lack of specific or general experience in the particular matter at issue, incorrect reasoning, and facts mentally added by the witness. In brief, we search the expert upon the facts, his reasons and his experience.

One important matter in the examination of medical witnesses is often overlooked: the scope of his examination. It may have been limited to a physical examination without sufficient laboratory tests, and the tests done may have actually been made by a nurse, assistant or another specialist. The admissibility of such tests will turn in most cases upon the amount of supervision by the testifying witness and his presence at one or more important phases of the test. If the witness is a specialist, close scrutiny may reveal that he has attempted to extend his testimony into other fields in which he is not qualified. If the witness is a general practitioner, inquiry may reveal that his experience with the matter at issue has been limited, and that when similar problems are presented in his medical practice he usually calls in a specialist.

When the witness comes to detail his findings, positive or negative, and his conclusions, the crux of his testimony has been reached. It is the one part of his evidence that will be clearly understood and easily remembered by the jury. It is the reason he was employed and the reason all facts were made available to him. It is the most difficult part of his testimony to shake on cross-examination because it calls for a conclusion and opinion arrived at and reported to opposing counsel long before he ever took the stand.

In a personal injury case the questions propounded during this last phase of the expert's examination are directed to the central issues of the cause of action or defense. They are preceded by legal research and the pleadings, and are followed by the measure of damages instruction. Therefore, the questions will search out opinions concerning the nature, character, extent

29. *Rath v. Knight*, 55 S.W.2d 682, 685 (Mo. 1932).

and permanency of the injuries, the physical and occupational disability therefrom, the pain to be expected in the past and future, the causal relation between the trauma and the injuries, the necessity for further medical care, and the reasonable value of medical services rendered and to be rendered.

III

The successful presentation of expert evidence in court involves much more than a native cleverness or general resourcefulness on the part of the attorney, or the choice of an expert believed to be favorable to those for whom he testifies. The attorney must have a thorough knowledge of the elements of not only his own side of the case, but also of those of his opponent's cause of action or defense. The expert should have adequate time and opportunity to make his examination, to obtain all necessary laboratory aids to diagnosis, to review reports furnished by others, to know the testimony of those who have preceded him, to understand the several claims of the parties and the points of disagreement, to conduct research into obscure or forgotten medical lore, to discuss the case with the attorney and then instruct him upon the general nature of the medical questions which should be asked and the answers to be expected, to make arrangement for his fee, and to know the approximate time for his appearance in court. Whenever possible, the attorney should buy or borrow medical books with detail sufficient not only to acquaint the attorney with some of the technical phases of the matter, but to use in cross-examination.³⁰ In important cases many attorneys conduct their own medical research and make it available to their witnesses.

Recurring once more to the first part of this paper in which the generally unsatisfactory relation of law with science was discussed, it should not be supposed that criticism of the past or existing state of that relationship should discourage all effort to correct it or all hope of improvement. It has been only half a century since Mr. Justice Holmes said that "an ideal system of law should draw its postulates and its legislative justification from science." Behold the progress in nineteen centuries since the time when Paul in his first epistle to Timothy warned him

30. *Hemminghaus v. Ferguson*, 358 Mo. 476, 488, 215 S.W.2d 481, 489 (1948).

to avoid "profane and vain babblings of science so called." So some progress has been made. Indeed, since that day in 1895 when Mr. Justice Holmes spoke so bravely and so well, other figures have appeared with brighter dreams of improving the administration of justice by science and expert witnesses. It is entirely proper that we listen to the honeyed words of a modern prophet who tells us:

In the age of Scientific Jurisprudence, law will gain new authority by deriving its rules and statutes from social data carefully collected; it will welcome illumination from cognate fields of learning to guide its formation of value judgments; historical rules will be put to the test of current utility; the pure introspectionist will have to move over for the inductive scholar and the functionalist; psychiatric criminology will lead to radical reform of our criminal law; behavior problems will be studied in law schools and a new type of lawyer will appear on the scene, trained to function as a social clinician. Law will aid men of medicine and of science to extend the social effects of their discoveries, to eradicate certain diseases, to help cure the widespread disturbances of physical and mental health which now spring from socio-economic maladjustments. Between law and science the whole fabric of society may be spun anew.

These vital cooperations must be nurtured by joint programs of law schools and medical schools; by purposeful cooperation of physician and scientist with members of the bar and bench. In the medical college the old lectures in medical jurisprudence must give way to an audacious program in Legal, Social and Industrial Medicine dedicated to systematic study of socio-legal-economic-scientific problems.

The time is gone when law and science might continue to expand their authority while pursuing mainly a course of intellectual isolationism. The survival and security of man, and his hopes of happiness, depend upon the successful quest of social synthesis.³¹

31. *Smith, Interactions of Law and Science*, 24 N.C.L. REV. 104 (1946).