

## House Bill No. 246 Revisited

ARTHUR E. HALLERBURG

Department of Mathematics

Valparaiso University, Valparaiso, Indiana 46383

### Introduction

In the year 1966 the State of Indiana celebrated the Sesquicentennial of its admission into statehood, and the Indiana Academy of Science joined in this observance with a number of appropriate activities. Among these was a program of invited papers on the history of the various sciences and of mathematics in the state over the 150-year period.

For a small number of persons the association of "Indiana" and "mathematics" immediately brings to mind the true story of the attempt in 1897 of the state legislature to pass a bill establishing a new way of "squaring the circle." In essence the bill would have provided for use in this state a new value of  $\pi$ , the "circle number." But Dr. Will Edington [4], who wrote on the history of mathematics in Indiana for the above observance, did not include reference to this story in his review—and probably rightfully so. For, first of all, the bill was not passed (parenthetically, nor was it defeated—only "indefinitely postponed"); second, incorrect or false "mathematics" is not mathematics; and finally, Dr. Edington had already recounted in detail in the 1937 Proceedings of the Academy [3] the action of both the House and the Senate on House Bill 246.

Accounts of circle squarers and angle trisectors have been so common over the centuries that mathematicians customarily pay them no concern. The fact that the mathematical work of E. J. Goodwin, M.D., found its way into the legislative halls and was almost passed into law has set this solution somewhat apart from the rest. The story has been given a brief paragraph in several journals and books on the history and miscellanea of mathematics, and it gives a bit of comic relief to any account of the "history of  $\pi$ ." The usual reference notes that the bill actually proposed, in verbose and hidden verbiage, two different values of  $\pi$ , first the value of 4, and then 3.2. In 1961 the story was featured in a Sunday Supplement article in the *Indianapolis Star Magazine* [19]; that account is based largely on Dr. Edington's source material, with the addition of pictures and information concerning some of the legislators involved.

There is a view that the history of mathematics, when properly examined, is not just the recounting of mathematical discoveries and developments, but rather that it mirrors, reflects and illustrates various cultural and social forces and changes—indeed, is inseparable from these.

Within this frame of reference a number of questions arise. Who was Dr. E. J. Goodwin, author of the bill—what was his background? Since he was a resident of Solitude, Posey County, a small community just seven miles from New Harmony, Indiana, were his ancestors con-

nected in any way with that "boat load of knowledge" which in the 1820s was to establish New Harmony as one of the innovative educational enterprises of the mid-west? Why did he find interest in mathematics, and what happened to him after passage of his bill was denied? What was the editorial reaction, if any, of the newspapers of Indianapolis, of other Indiana towns, of the press of other states? What was the response of the mathematicians to this proposal?

Recent investigations covering previously unnoted sources now permit us to answer most of these questions. They reveal details which make a strange story even stranger!

### Goodwin's Education and Medical Practice

Edward Johnston Goodwin was born in the Commonwealth of Virginia, Amherst County, near Lynchburg, on December 30 of uncertain year. His tombstone gives the birth year as 1824, other sources give 1825 and 1829, but perhaps the most reliable year is 1828. Based on the 1828 year, Dr. Goodwin was 68 at the time his bill was considered.

A reporter for the *Indianapolis Sun* [13] interviewed Dr. Goodwin at the time his bill was proposed and records the following (February 6, 1897):

Dr. Goodwin was born in old Virginia in 1825, absorbed the Lynchburg school instruction, then went to Roanoke college, but did not graduate because of a shortage in his father's purse-string. So he went out and gave the young idea [*sic*] lessons in archery. He had an aunt who thought there was something in the boy and sent him to Philadelphia, where he took lectures and stepped out of a medical college with "M. D." attached to him, which has clung to his name to this day. The west attracted him. He came to West Virginia, and later on west to Indiana, stopping in Orange county, where he rode the hills on horseback to cure the sick. Bad health contracted in riding the hills drove him to Gibson county, where he lingered three years, then went to Posey county, where he has lived near Solitude up to this time.

"It is remarkable how I have survived all the hardships through which I have passed," he reflected, "but in time the purpose of my life will be revealed."

From information supplied by Dr. Goodwin himself we are able to outline with reasonable completeness the chronology of his medical education and practice. The same 1897 Indiana legislature for the first time required a state license for the practice of medicine (prior to that time the licensing was done only in the county of practice). From the application of E. J. Goodwin, filled out in his own hand, we can ascertain the following [8].

He spent three years in the study of medicine, surgery, and obstetrics at Lynchburg, Virginia, under John H. Patterson, M.D., from October, 1851 to October, 1853, and again in 1854. He attended courses of instruction at the Philadelphia College of Medicine, Philadelphia, Pa., for five months in 1853 and 1854, and again for five months in

1854-1855. Goodwin stated he was a graduate of the Philadelphia College of Medicine, March, 1853 but the correct year is 1855.

From his application for certification we also have the specific places where he had engaged in his practice—Burks Garden, Chatham Mill, and Washington Springs, Virginia, 1855 to 1867; at Vallene, Honey Creek, and Princeton, Indiana, 1867 to 1878; and at his present place of residence (Springfield) since the spring of 1878. The mail address for Springfield was actually Solitude, Posey County. Dr. Goodwin then continued to live there until his death in 1902.

### Two Years in New Harmony

From another source we can fill in several significant details which recount some of the hardships that he had endured and also open up another episode in Dr. Goodwin's life. It is of particular interest since it directly relates to New Harmony, that small community which played an important role in the history of communal and educational developments in Indiana.

Again the information comes directly from Dr. Goodwin himself. In two successive issues of the weekly *New Harmony Register*, for April 23 and April 30, 1880, there appear Letters to the Editor from E. J. Goodwin. Since there were no regular news stories covering the incident involved, we must turn to Dr. Goodwin's own account of what had happened:

Mr. Editor: Two years ago I removed from Owensville, Ind. to New Harmony. This was done in the face of all the disadvantages which a physician necessarily incurs when, from any cause, he may see fit to change his business relations with a community wherein he is known for one in which he may be a total stranger. In making such a change in the aspect of its professional bearing I was not governed by the pecuniary consideration which such a move of necessity involved. Devoting six years of my life in building up at Owensville a reputable standing among men who had accorded me a living patronage, it was relinquished from an inexorable law of necessity. The hand of misfortune had been laid upon me so heavily at Owensville that it was a duty to myself to get out of sight of scenes which only served to daily remind me of an unbearable wreck of fortune.

In June of 1876 I was one of the 11 who suffered from the fire which destroyed nearly the entire business part of the town. This reverse tended to hasten another already in anticipation, which a few months later culminated in the death of my wife—my truest and dearest earthly friend. The effect of such reverses coming in the order they seemed by fate decreed, completely divorced me from all the business charms which the place might have appeared to others to have for me from my established professional relations.

People never pause to think how easy and convenient a matter it is to prejudice a community against a doctor who has recently changed his business locality. Generally, the first thing that is

insinuated against him, is that he has proved a failure where he left, otherwise he would not have changed his location. Now I came to New Harmony fully aware of all these little difficulties with which I had to contend, and prepared to offset, as the best I could, any thing I might hear derogatory to my professional claims at least.

I want, by this, the members of the medical profession to know all over Posey county that I had not been in New Harmony ten days before I was informed by a doctor of the place that another doctor of the town had already started the report that my own "daughter would not trust me in the capacity of physician." I said, in reply "that this was indeed a heavy one to begin with." To offset the influence of such an unkind and malicious report as this was in all of its characteristics, I addressed through the Postoffice the following printed circular, which would never have been circulated but for the reasons as above stated.

The following is a true reprint of the card whose circulation the physicians have took occasion to pronounce as in violation of medical ethics.

E. J. Goodwin.

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E. J. Goodwin, having permanently located at New Harmony, hereby respectfully tenders his services as a physician and surgeon, to its citizens and those of its adjacent vicinities.

Owensville, Ind., March 6, 1878.

The undersigned citizens of Gibson County, having been acquainted with Dr. E. J. Goodwin for a number of years, would cheerfully recommend him to the public as a worthy gentleman and a skillful and honorable physician.

The names of 48 signatories then follow. The circular also included two brief signed statements that Dr. Goodwin had given "complete satisfaction" in his services to the undersigned (one was a clergyman).

A week later, in the second letter, Dr. Goodwin wrote at great length (an entire double-width newspaper column) on "Medical Ethics and the Relation of the Physician to the Public." His theme was that the slanderous comments of the other physicians were more in violation of professional ethics than what he had done, and that the true test of "professional honor and acumen" is "at the bedside." No additional facts of the controversy were given. One of the closing paragraphs of the letter will give some insight into the Doctor's rhetorical if not mathematical style:

He who assumes to perform the functions of the true physician, undertakes to exercise a class of the most solemn and difficult duties engaging the feelings and attentions of finite superintendence. To be the true and gentle watchman of the advent and exit of the generations as they take on visible life to be but again trans-

ferred by disease, death, and the grave, is to become a sentinel over which the angels must watch and vie with one another in guarding. When looking down the silent vista of ages gone, whatever may be thought of the bright hopes and aspirations which once enlivened the varied forms of the buried generations, the association of one thought more than all else connects the feelings of the present with the dreams of the past. Whatever may have been the form of the fatal agencies entering upon the confines of precious life and earthly joys, found the portals of both budding and decrepit age guarded by the sleepless watchman with armor donned with all that had been revealed as potent against disease and death. The buried of the generations past but points out the landmarks of the battle ground whose opposing contestants grow incessantly more fierce and active as the lapse of time continues to encroach upon the future ages. And as long as human life and hope and suffering continue to ebb and flow, will this terrible and universal conflict continue to be as incessantly waged. That conflict over which angelic vigilance presides with ceaseless concern to guard against the possible transgression of nature's most sacred laws, must indeed be one of infinite moment both in heaven and in earth.

Apparently within several weeks after these letters Dr. Goodwin moved from New Harmony to Springfield, where he lived until his death. His medical application, filed in 1897, stated that he had lived in his "present place of residence since Spring of 1878," that being "Springfield, County of Posey, State of Indiana, my address being Solitude, Posey County, Ind." In his own eyes the two years in New Harmony were pages torn from the record of his professional life.

There is another reference to New Harmony. To understand the inferences which we will draw we must first refer to another source of information about Dr. Goodwin.

An entire issue of the *William and Mary College Quarterly Historical Magazine* of 1897 [9] is devoted to the geneology of "The Goodwin Families in America." The detailed geneological records presented there are of no particular significance for our study, except to note that our Dr. Goodwin was the third generation of Goodwins residing in Amherst County, Virginia, and his grandfather had served in the Revolutionary War under General Lafayette. The date of the publishing of this geneology survey, October, 1897, is particularly significant, since it will be recalled that the bill was presented to the 1897 Legislature in January and February.

The entry for Dr. Edward Johnston Goodwin gives his descent; his birthdate is given as December 30, 1828; mention is made of three wives, although the third is unnamed. "He resides in Solitude, Posey County, Indiana. He is a physician and mathematician." Then follows, for three and one-third pages and without explanation or comment, a reprinting of an article from the *Indianapolis Journal*, undated, "Indiana's Squared Circle." This article describes in great detail Dr. Goodwin, his mathematical accomplishments, and the bill itself. Following are the opening and closing sentences of the article.

Official recognition by one branch of the Indiana Legislature has been given Dr. Edward Johnston Goodwin for solving three geometrical problems which have puzzled the brains of mathematicians since the erection of the pyramids of Egypt. . . . [The bill] passed the House under a suspension of the rules, without a negative vote. Professors from Ann Arbor and Johns Hopkins have seen the demonstration, and declared it perfect.

The article does not state anything about the bill's reception in the Senate, nor does it indicate in any way any adverse criticism of Dr. Goodwin's accomplishments. The article reads like a "Sunday Supplement" feature article—and indeed, that is what it turns out to be!

This article did appear in Part II of the *Indianapolis Journal* for Sunday, February 21, 1897 [11]. This date is significant, since the Senate terminated the bill on February 12. The editorial staff of the *Journal* had been won over by Dr. Goodwin (at least for a time, as we will document shortly). The article as it originally appeared in the *Journal* was favorable to Dr. Goodwin, and it did not refer to the bill's defeat in the Senate. There are several deletions in the copy appearing in the *William and Mary* Supplement, mostly in the technical description of the mathematics. There is one deletion which may be of greater significance.

The original article in the *Journal* contains the following paragraph.

The man who has thus shown the errors in the text-books from Euclid's time to Loomis is a native of Virginia, where he was born near Petersburg, Dec. 30, 1828. A wealthy aunt sent him to school and furnished the funds for a course at the Philadelphia Medical College. For forty years he has been a practicing physician in the vicinity of Solitude, Posey county, Indiana, that densely rural part of the State referred to by the humorists as Hoopole township. He might be considered another illustrious product of the famous Robert Dale Owen colony that was established at New Harmony in Posey county, about seven miles from Dr. Goodwin's home. He was not only a friend and early associate of Dr. David Dale Owen, but is related to the family. He is a most modest citizen, refusing all modern methods of advertising himself. He is six feet tall and his frame is strong and elastic and his massive, angular head correctly suggests his rugged mathematical brain.

Now the article as reprinted in the *Quarterly* geneology study gives the place of birth as being near Lynchburg, and it does not contain the two sentences referring to his being a product of New Harmony and an associate of Dr. David Dale Owen.

It is our conjecture that Dr. Goodwin himself submitted a copy of this favorable article to the collector of the geneology material for the *William and Mary Quarterly*; that he corrected the place of birth from "near Petersburg" to "near Lynchburg" (Petersburg was another town in Virginia near Richmond, and a reporter may easily have confused the names); and that he, for some reason, deleted the refer-

ence to the association with New Harmony. The "illustrious product of the famous Robert Dale Owen colony" is the sort of comment a favorably disposed feature writer might likely add. The association with David Dale Owen is clearly a mistake, since Dr. Owen died in 1860, and we do not have Dr. Goodwin in this area until the late 1860s. His relation to the Owen family is another problem. Since Dr. Goodwin's own ancestry was clearly unrelated to New Harmony, the relationship, if there was one, could only have been by marriage. We have found no name of his third wife. His geneology record states that his first wife, whom he married in Virginia, died in 1866. "Dr. Goodwin was married, second, to Hester L. Wills, and third, to —." The second wife would be the one who died shortly after the Owensville fire in 1878. At the the time of Goodwin's own death (1902), we find that he was survived by his widow (unnamed), and a son and married daughter, whom we can identify as children by his first wife.

One can well imagine that the 1878-1880 episode in New Harmony may well have been a source of discomfort to the Doctor for the rest of his life. Who the personalities were with whom Dr. Goodwin had his conflict in 1878-1880 we do not know. We do feel that there is significance in the deletion of this section in the reprinted article.

#### Motivation for Mathematics

We turn now to another question: what motivated a country doctor to turn to mathematics and, in particular, to the topic of squaring the circle. The *Indianapolis Journal* (February 21) reported simply: "Dr. Goodwin discovered the formula for squaring the circle eight years ago." This would have placed the "discovery" about 1888, some years after he moved from New Harmony. This date would agree with the 1889 date which Dr. Goodwin gives for the date of copyright for his discovery. Dr. Goodwin would have been of about age 60 at this time.

The *Indianapolis Sun* (February 6) reporter who interviewed Goodwin immediately after the bill was passed by the House was also interested in this question. He reports as follows:

The reporter repeated a question often put before as to how he came to dabble in mathematics, for the doctor confessed that he had never devoted much time to it. Only since 1888 has he thought about the circumference of the circle. The doctor evaded the question time and again by saying:

"If I were to say that the discoveries are revelations to me, they wouldn't believe it. This is an age of unbelief. Do you know it?"

Dr. Goodwin did dally with a Loomis geometry a while, read what he could find about the circle, but found it of little service. A discovery like his owes no allegiance to any hitherto known truth in mathematics, for according to him the world has been of the opinion, for 2,000 years, that what he has done could not be done.

We will note in several other instances that Dr. Goodwin often refers to the fact that he has solved all three of the famous problems of mathematics—squaring the circle, trisecting an angle, and duplicating a cube. Historically speaking, these were originally presented as geometrical construction problems, restricted to straightedge and compass, but nowhere does Dr. Goodwin refer to a compass and straight-edge construction for squaring the circle. Primary motivation for attacking these problems seems to be that peculiar combination of inquisitiveness, disbelief, ingenuity, persistence, and irrationality which has beset from mathematical time immemorial those who have been unable to comprehend them. In this sense Dr. Goodwin was probably no different from hundreds of other circle squarers.

We shall offer a possible second reason, but this is only a conjecture. New Harmony in a special sense epitomized education and to a large degree, scientific knowledge. Dr. Goodwin's experiences in New Harmony were such that he undoubtedly found himself in opposition to the community—or if not the rank and file of the community—at least to some specific segments of it. This certainly included some of the medical profession, and possibly this may have spilled over to some of the more educationally elite. What better way to compensate for his problems and show up the opposition than to prove that mathematicians and scientists had been wrong for all these years, and that he had discovered “the truth”! Thus Dr. Goodwin's results may well have been “a product of New Harmony”, but in an opposing rather than a creative sense. We know of no way to test this conjecture, but it offers an interesting hypothesis!

We believe another factor was involved—probably not as original motivation, but as a feed-back and reenforcement agent. Dr. Goodwin developed the devotion of a zealot in his callings. Recall his impassioned letter describing the role of the physician in relation to the patient. Having made a mathematical discovery, he wanted to share it. And his sharing met with a considerable amount of favorable response—or at least so he interpreted it. This reassurance naturally was a justifying and accelerating feature which eventually was to turn into an obsession.

### National and Foreign Acceptance

To illustrate this, let us turn to the period between 1888 and 1897, between the time of the discovery and consideration of House Bill No. 246. We must rely entirely on several newspaper accounts for our information, and we must remember that all of this was transmitted to reporters by the good Doctor himself.

The first account is from the *Journal* (February 21, 1897):

Dr. Goodwin had his formulas and laws derived from them copyrighted in the United States and in seven countries of Europe—England, Germany, Belgium, France, Austria, Italy, and Spain. During his visit to Washington he won the support of the professors at the National Astronomical Observatory, at the head of which is the celebrated Professor Hall, whose fame is secure with the discovery of the moons of Mars. Dr. Goodwin's demonstration



was accepted by all at the observatory. When it was made clear to Professor Hall that the old multiple of "Pi" should be 3.2 instead of 3.1416 plus, he exclaimed: "I always thought the earth traveled pretty fast in its orbit."

Professor Hall's practical mind at once grasped the fact that the known speed of the earth in its orbit was now explained because the orbit was much greater than the astronomers had figured it. Mr. Goodwin has an instrument constructed by Gardner, the well-known astronomical instrument maker at the Washington observatory, which gives a practical demonstration of the correctness of his formulas. The venerable author has a deskful of letters from mathematicians at the leading colleges in America, and, better than all, a letter from his agent in London showing that his demonstration was presented to both Huxley and Tyndall and indorsed by them before it was copyrighted in England.

It is difficult to accept this account as complete truth. The Professor Hall referred to was Asaph Hall, who in 1877 discovered the two moons of Mars and calculated their orbits. He was professor of mathematics at the U. S. Naval Observatory, in Washington, D.C., until his retirement in 1891.

#### Dr. Goodwin and the Chicago World's Fair

We turn to another episode in the pre-legislative years. In the *New Harmony Register*, September 2, 1892, under "Illinois Items" we find: "Dr. E. J. Goodwin, of Indiana, has been granted space at the world's fair to give scientific lectures." This would refer to the 1893 Columbian Exposition in Chicago.

Amplification of this appears in the *Journal* Sunday supplement article (February 21):

Dr. Goodwin discovered the formula for squaring the circle eight years ago, but not until the World's Fair did he make any effort to get his discovery before the world. He secured space in the liberal arts building for hanging his charts and intended to be present and make his demonstration to those visiting the educational exhibit, but Selim H. Peabody, chief of the department, after granting the space, revoked his permit and advised the author to present his solution to the mathematical journals.

Our knowledge of the World's Fair episode is limited to the above items. We have not been able to determine, either from the *New Harmony* papers nor from any records of the World's Fair exactly when the doctor's permit was revoked, or what led Mr. Peabody to do this. The episode is significant—approximately four years after his discovery Dr. Goodwin felt his results were important enough to receive the exposure that an exhibit at the World's Fair would afford. Furthermore, it supplied the impetus for an exposure to the mathematical world—which brings us to another chapter in the story of Dr. Goodwin.

Dr. Goodwin and the *American Mathematical Monthly*

We continue with the *Journal's* account. (Recall that Mr. Peabody had advised the author to present his solution to the mathematical journals.)

Dr. Goodwin then sent his solution to the *American Mathematical Journal*, the highest authority in this country, and the editor instantly accepted it and printed it in the September number of 1893, while the world's fair was in progress. It attracted the attention of mathematicians the world over, the scientific journals at Paris at once communicating with the author for original contributions to their papers.

On Sunday, February 28, a week after the above had been published, there appeared two more columns in the *Indianapolis Journal* devoted to "Squaring the Circle." The first began with a letter to the editor from Wm. E. Heal, of Marion, Indiana, dated February 22 (1897). We will have more to say about William Heal and the remainder of his letter, but for the moment we note just one of the paragraphs of the letter.

It is stated that Dr. Goodwin's solution was sent to the editor of the *American Journal of Mathematics* and "instantly accepted" and published in the September, 1893, number. The writer is and has been for several years a reader of the above mentioned publication. The September, 1893, number is now in his library, bound with the other numbers for that year, and he can assure your readers that no such article appears there. And further, it is not likely to appear in that or any other mathematical publication of repute.

Such was the response of a mathematician of that day—one that we of today would expect. Mr. Heal was both correct, and incorrect. No contribution of Dr. Goodwin appeared in the September, 1893 issue, but one does indeed appear in July, 1894. Since the *Journal's* original reference has referred to the *American Mathematical Journal* as "the highest authority in this country," and "the editor instantly accepted it and printed it," the contribution must be reviewed in the context of the actual situation.

The *American Mathematical Monthly* is today the official journal of the Mathematical Association of America. But the Association was not founded until 1915. For many years the *Monthly* carried the inscription, "*The American Mathematical Monthly*, founded in 1894 by Benjamin F. Finkel, was published by him until 1913. From 1913 to 1916 it was owned and published by representatives of fourteen Universities and Colleges in the Middle West." Finkel taught at Drury College, Kidder, Missouri, and published the journal with the assistance of a succession of associate editors.

In the Fiftieth Anniversary Issue of the *Monthly*, Albert A. Bennett [1] wrote the history of the MAA before World War I, and in speaking of the *Monthly* before it was taken over by the Association refers to "the largely rustic quality of early issues." He also reported that

“early issues brought much bitter argument and personal denunciation over what most of us would regard as matters of pedagogical taste.”

In July, 1894 (Volume 1, Number 7), in the department “Queries and Information,” conducted by J. M. Colaw, member of the American Mathematical Society and principal of the high school in Monterey, Virginia, there appears a contribution, “Quadrature of the Circle, by Edward J. Goodwin, Solitude, Indiana. Published by the request of the author.” The article which follows is essentially the same as the content of House Bill No. 246.

A year later, in the same department, we find another contribution of Dr. Goodwin [7].

(A) The trisection of an angle: The trisection of a right line taken as the chord of any arc trisects the angle of the arc;

(B) Duplication of the Cube: Doubling the dimensions of a cube octuples its contents, and doubling its contents increases its dimensions twenty-five plus one per cent.

By request of the author,

Edw. J. Goodwin, Solitude, Indiana.

Note again the “By request of the author”! Briefly, the editorial policy of the *Monthly* at its inception was to print whatever was submitted (or at least as much as there was room for), without the screening or evaluation of one or more referees. Significant is the statement which appeared in the October, 1894 issue, where Editor Finkel wrote [5]:

We have on hand a number of criticisms to leading articles in the *Monthly*, also a number of replies to previous controversies; but as we also have numerous papers of high order and great value, we desire that these shall appear first.

One may suspect that there were criticisms of Dr. Goodwin’s article on the quadrature of the circle, but if so, none was ever printed in the *Monthly*.

It should be noted that Wm. Heal apparently was aware of the second contribution of Dr. Goodwin in the *Monthly*, since the last paragraph of his letter begins as follows:

Concerning Dr. Goodwin’s solution of the “trisection of an angle,” it is only necessary to remark that any schoolboy with the slightest knowledge of elementary geometry can convince himself that it is absolutely false and incorrect. The solution is enough to resurrect old Euclid’s mummy. As for Dr. Goodwin’s solution of the “duplication of the cube,” it is to be remarked that it is an approximation, nothing more.

#### *Der Tägliche Telegraph* and House Bill No. 246

We again pick up the story as it unfolded when the bill was introduced as legislation in 1897. Dr. Edington’s article reports the legislative action as recorded in the Indianapolis papers, the *Journal*, the *Sentinel*, and the *News*. It did not include the reports of the *Sun*

and of *Der Tägliche Telegraph*. Happily, at least from the viewpoint of the mathematician, voices were almost immediately raised in protest of what was happening. The *Telegraph* was a German language newspaper, a daily, with, as we shall see, a staff better qualified to meet the challenge of reporting on matters mathematical than its English speaking competitors.

First, the article on January 19, the day after the bill was first introduced into the House (14): (translation)

#### The Squaring of the Circle

The squaring of the circle is not a myth. Someone is certain he has discovered this; the farmer Taylor I. Record from New Harmony, Posey County, is responsible for the bill dealing with this subject which was introduced yesterday in the House.

The clerk of the House, O. P. Iles, succeeded in reading the Greek words with which the bill superabounded only with the greatest effort. The members could hardly believe their ears, as they were compelled to listen to the new way to accomplish this squaring, and how it should be taught in the schools.

After the bill was read and the representatives had enough time to recover from their amazement and dread, the Speaker posed the humble question as to which committee the Squaring of the Circle should be referred.

Gast of Bloomington, a Democrat, moved, amid great laughter, that the bill be referred to the Finance Committee, as it has made itself responsible for the solving of great problems, and since it has the time to do the job.

Another representative arose and said that he believed the Committee on Swamplands was the appropriate place for successful wrestling with the problems.

Midst general cheerfulness the Speaker then referred the "Squaring of the Circle" to the Committee on Swamplands where, in the swamp, the bill will find a deserved grave.

The editorial writer for the *Telegraph* did his research promptly, and well. The very next day, January 20, the *Telegraph* carried an editorial on "Squaring the Circle," which we shall only summarize here. After noting the "soaring progressiveness" reached in the state of Indiana through the bill introduced by the representative "from the formerly communal colony of New Harmony in Posey County," the article traces the history of the squaring of the circle problem, mentioning, among others, the Rhind Papyrus, Archimedes, Huygens, Lambert, Lindemann, and Weierstrass. The editorial closes as follows:

Only the great group of the pseudo-educated concerns itself anymore with the squaring of the circle, but this with such eagerness that the famous French academician Arago let it be known that each further solution of this sort sent to him would be tossed aside unread. This class of men is the same as that which continually torments itself with the problem of perpetual motion.

Well—such strange fellows there will always be.

(Parenthetically, Dominique Arago (1786-1853) had been permanent secretary of the French Academy of Science, after having held the chair of Analytical Geometry at the *École Polytechnique* in which he succeeded Gaspard Monge.)

There is little reason to suppose that many of the state legislators read the German *Telegraph*! As an indication of the attitude of at least some of the legislators over against foreign languages, witness another bill introduced into the same 1897 Legislature (but also not passed into law)—a bill which would have forbidden the printing of restaurant menus in French!

There is one other item of interest from the *Telegraph*. On February 15, three days after the bill was finally laid to rest by being indefinitely postponed by the Senate, we find the following:

#### The Squaring of the Circle

With regard to the bill introduced by a farmer from New Harmony concerning the squaring of the circle, a leaflet states, among other things: "An inaccuracy of computation cannot be avoided in the irrationality of the number 'Pi.' But this apparently does not satisfy those sages. They believe themselves destined to magnify this inaccuracy, and to publicly expose their wholly unclear view of mathematical concepts and values. But the matter also has a serious side. The delusion that everything can be altered through laws must have in such heads climbed to the heights of irreparably muddle-headed thinking."

Fortunately the Senate was wiser than the House and received an unfavorable report from the committee.

The bill is accordingly as dead as a coffin nail.

This is the only reference to such a leaflet (*ein Wechselblatt*) that we have found. Perhaps it was an editorial from some other newspaper.

Whether or not the German *Telegraph* was read by the editorial staffs of the other newspapers is something we cannot determine. If it was read by the staff of the *Indianapolis Journal*, they found it quite unconvincing. The *Journal* had printed the long Sunday Supplement article on February 21. The following day there appeared this brief editorial in the *Journal*:

Some newspapers have been airing their supposed wit over a bill introduced in the Legislature to recognize a new mathematical discovery or solution of the problem of squaring the circle, made by Dr. Goodwin, of Posey county. It may not be the function of a Legislature to indorse such discoveries, but the average editor will not gain much by trying to make fun of a discovery that has been indorsed by the *American Mathematical Journal*, approved by the professors of the National Astronomical Observatory at Washington, including Professor Hall, who discovered the moons of Mars; declared absolutely perfect by professors at Ann Arbor

and Johns Hopkins Universities, and copyrighted as original in seven countries of Europe. The average editor is hardly well enough versed in high mathematics to attempt to down such an array of authorities as that. Dr. Goodwin's discovery is as genuine as that of Newton or Galileo, and it will endure, whether the Legislature indorses it or not.

We should point out that the *Journal* did ultimately set the record straight, even if it did not publicly confess its previous editorial indiscretions.

#### Wm. E. Heal vs. E. J. Goodwin

We return now to the three items which appear in the *Journal* for Sunday, February 28. The first of these was the letter from Wm. E. Heal, previously mentioned. (Recall that he had not found Goodwin's article in the *Monthly*, but he had looked in the wrong issue.) In his letter Heal also briefly recounted the history of the problem, ending with Lindemann's proof of the transcendency of  $\pi$ , 1882. In fact, he had translated a later, simplified proof of the same result by Gordan, read it before the State Teachers' Association in Indianapolis in December, 1895, and afterwards published it in the *American Mathematical Monthly* (10). One paragraph of Heal's letter is of special interest:

The permit to exhibit the solution at the world's fair was probably revoked because the chief of the department found he had made a mistake in admitting such "stuff." Felix Klein of Gottingen, Sophus Lie of Leipsic, and Henri Poincare of Paris are the acknowledged leaders of the mathematical thought of today. The writer had the pleasure of meeting the first named and hearing him lecture at the Mathematical Congress of the world's fair in August, 1893. In one of his lectures (on the impossibility of the quadrature of the circle) he said: "The proof of the transcendency of Pi will hardly diminish the number of circle squarers, however, for this class of people has always shown an absolute distrust of mathematicians and a contempt for mathematics that cannot be overcome by any amount of demonstration."

Who was William E. Heal? Let us again refer to Dr. Edington's history of mathematics in Indiana (4):

To the best of my knowledge the earliest research paper by an Indiana native was published by William Ephraim Heal (1856-1925) in 1879 in Volume 6 of the *Analyst*, the only mathematical periodical being published until the *American Journal of Mathematics* appeared in 1878. Heal received his education in the Marion, Indiana, Normal School, and he never was professionally associated with any college or university. Mathematical research was his avocation, and he published a number of research papers in American journals and one in the *Proceedings* of the London Mathematical Society on Number Theory and advanced Theory of Equations. He became a member of the London Mathe-

mathematical Society in May, 1892. He was undoubtedly the outstanding Indiana mathematician before 1900. He was one of the first four Indiana men elected to the New York Mathematical Society in April, 1891. . . . Heal became a professional auditor but spent the last fifteen years of his life in U. S. Government Service in Washington, D. C.

We return to the February 28 *Journal* for the second of the three articles. It immediately follows Heal's letter.

#### WHAT DR. GOODWIN SAYS

The venerable Dr. Goodwin fairly exploded with laughter when he saw the above letter declaring that the doctor's demonstration of the quadrature of the circle is grossly false because "every mathematician knows it is impossible."

"Of course they know it is impossible," said Dr. Goodwin, "and particularly this Mr. Heal, whom I do not know. It must be impossible to square the circle, for Mr. Heal says so. Now isn't that a bright argument? Drop out the middle initial of W. E. Heal's name," said the doctor, "and it is 'W-h-e-a-l', or wheel, and if a man has 'wheels' in his name he may also have them in his head, and a man with wheels in his head always thinks he is the only man on earth whose trolley is not misplaced."

Here the doctor laughed again and exclaimed: "You can't expect me to answer this letter. He simply denies without giving any evidence that he has so much as read my copyrighted demonstration printed in the *Journal* last Sunday. A denial is not a proof. I may deny his existence, but that does not alter the fact. What if Professor Beman, of Ann Arbor, is writing a book to demonstrate the impossibility of the quadrature of the circle? My demonstration is already out. Professor Beman should have written his book a century ago to have been original. This is an age of progress. New things come up every day. Seems to me I have heard of a discovery that enables a physician to look through the human body, to observe the pulsations of the heart, count the number of nails and pants buttons swallowed by a baby, and so on. How long ago was it anyone might have denied the possibility of the X-ray? But not today.

"No, you must excuse me from answering this man. He is only one of thousands, many of them learned men, who will declare it is impossible to square the circle. But if he is a real mathematician he would not say it is impossible after reading my demonstration."

"There is no mystery or quackery in that demonstration. A schoolboy can be made to see it if he has mastered the elements of geometry. I can't deceive anyone. You can take out a tape line and verify my demonstration in the fraction of a minute."

"But cannot you suggest some simple example by which the quadrature of the circle may be —"

"Of course I can. Here: Tell any one who questions my demonstration to describe a circle whose radius is  $5/8$  (the diameter thus

being  $1\frac{1}{4}$ ). The circumference is 3.2 according to my ratio. Then circumscribe the circle with an equilateral rectangle and compute the area of the rectangle first, which you can do if you know anything about geometry. Then allow one square inch of area for the circle and see if the difference between the area of the circle and the area of the circumscribed rectangle proves that the area of the circle is more than one-fifth greater than the area of a square with an equal perimeter. I am offering five prizes of \$200 each to any man who will disprove five of my propositions, and one of the prizes is for my quadrature of the circle. Mr. Heal might win one of those prizes if he is able to prove what he says.

"According to the old method every mathematician has to compute the area of a circle as more than one-fifth greater than the area of a square on an equal perimeter. The absurdity is not in my demonstration, for mathematicians all agreed that to square a circle is to find a square whose perimeter exactly equals the circumference of the given circle. That being the case, is it not simple enough to say that one side of the unknown square must be equal to the quadrant of the given circle? Don't you know that?"

"Why of course, doctor."

"Well, then, I'm done with quibblers."

With this the doctor indicated that the interview was at an end.

Dr. Goodwin left Indianapolis for his home in Solitude, Posey county on Wednesday, but announced that he would return here, perhaps in May, to give a public lecture and demonstrate his propositions, when he hoped to meet all the mathematicians of the State who care to see several propositions corrected after a century of errors taught in the schools.

It is due the doctor to say that his copyrighted demonstration printed in last Sunday's *Journal* was printed in the July number, 1894, of the *American Mathematical Monthly*, instead of the September number of 1893, as was incorrectly stated.

Following immediately thereafter is the third item appearing in the *Journal*:

#### HISTORY OF THE QUADRATURE

Dr. Goodwin's claim that he has squared the circle has resulted in a number of communications declaring that Dr. Goodwin's demonstration is in error because in it he asserts that the ratio of one side of a square to its diagonal is as 7 to 10. According to the Pythagorean theorem, long since adopted by mathematicians and proved by Euclid, 300 B.C., the sum of the squares on the sides of a right triangle are equal to the square on the hypotenuse. If Dr. Goodwin's demonstration be correct, this old theorem is incorrect, for the sum of the squares on his right triangle is 98, while the square on the hypotenuse is 100. Mathematicians also believe they have demonstrated that the old multiple "Pi" cannot be as great as 3.2, which Dr. Goodwin finds. They arrive at this circumscribing



a square about a circle whose diameter is one. The circumscribing square will then have a perimeter of 4. Reducing the circumscribing square by duplicating the sides over and over again, thus constantly drawing the perimeter nearer and nearer to the circumference of the circle, mathematicians find that when the square's perimeter has so nearly approached the circumference of the circle as to practically coincide, it measures 3.1416 plus, and this is taken as "Pi."

The article then quotes from "the new geometry just issued by Andrew W. Phillips and Irving Fisher, professors at Yale University," giving a brief history of pi, concluding with reference to Lindemann's proof that  $\pi$  is transcendental.

With that the *Journal* appears to have closed the story—there were no apologies or further admonitions to editors to check their authorities!

#### *The Chicago Tribune and House Bill No. 246*

During the floor discussion of the bill in the Senate on Friday afternoon (February 12), Senator Hubbell said that "in reading the leading newspapers of Chicago and the East, he had found that the Indiana State Legislature had laid itself open to ridicule by the action taken on the bill."

We are able to trace the handling of the story in one Chicago paper, the *Chicago Tribune*. On February 6 it reported briefly the House action of the previous day of suspending the rules and adopting "a new principle to define the relationship of the circumference of a circle to its diameter," the new value being 3.2 instead of the old principle of 3.1416. "The new method is the work of Dr. Goodwin, a physician and mathematician of Posey County."

An enterprising reporter or editorial writer for the *Tribune* did what enterprising newsman should do under such circumstances—he contacted a mathematician to find out what this was all about! As a result, in the *Sunday Tribune* (February 7) a second newsstory and also an editorial appeared. Prof. Elias Colbert of Northwestern University was questioned and was quoted as follows. "The tendency of modern school methods is to shorten work as much as possible. My impression was that the ratio was unchanged, and the object in altering the rule was to save school boys a lot of multiplying." The article also stated that the rule using 3.1416 "is one whose validity cannot be shaken. Any attempt to change it is bogus mathematics. The general impression was that the Indiana school children were getting lazy, and the man who contributed the 3.2 rule came to their rescue."

In a delightful editorial in the same issue, entitled "Indiana's Finger in the Pi," the writer enlarged upon this theme.

The Indiana Board of Health having taken radical action towards the suppression of kissing, the State Legislature has felt impelled, apparently, to attempt a similar crusade against an established custom, and has voted for the repression of the mathe-

mathematical Pi. Since the days of Euler, Pi has enjoyed a combination of all the numerals, with the exception of 6 and 8, and when delineated in all of its glory has been known as 3.1415927. Its early use was confined to multiplying the diameters of circles by itself to find the circumferences, but it has subsequently played an important part in the development of the species by bringing out in the young all their latent and innate depravity. Young men of unquestioned morality have been known to battle successfully with the trials of life up to the time they first made the acquaintance of Pi, but the uncompromising obstinacy of this debased array of numerals to contribute to correct solutions of problems has unsettled all sound principles and sown the seeds of reckless profanity.

The Indiana Legislature undoubtedly has been inspired by this historic circumstance to restrict the pernicious influence of this unholy mathematical factor. The House has therefore decided that hereafter in the State of Indiana Pi shall be 3.2. All that comet-like tail of perplexing figures is to be cut off. Circumferences of circles will not be the same number of times the diameters as they used to be but a trifle more in Indiana.

The immediate effect of this change will be to give all circles when they enter Indiana either greater circumferences or less diameters. An Illinois circle or a circle originating in Ohio will find its proportions modified as soon as it lands on Indiana soil. It will find itself under the sway of a modified Pi. But this revolutionizing effect on circles will be a small circumstance compared to the healthy moral tone that will be restored to the young people of Indiana who have been suffering from a Pi Blight. A Pi that is so simple as 3.2 ought to be free from any entangling features, but if perchance it still proves obdurate no doubt the Legislature will promptly lop off another decimal and call it 3.

This simplification of the mathematical Pi may be the forerunner of some similar modification of its etymological associates, both of which are known as Pie. Pie, as constituted at present, consists of a mixture of foodstuffs or lead type, according to the circumstances of its production. Both mixtures are frequently vague and contain ingredients of their kind as multitudinous as those that have cumbered the usefulness of Pi. Any legislation that will assure a fixed and simple identity to pies, such as has been provided for Pi, should be welcome to all the pie makers or pie eaters in the land.

On February 13 the *Tribune* reported the ultimate fate of the bill under the headline "Senators Afraid to Change Pi."

The bill was about to be passed when the point was raised that the Legislature had no power to declare a truth, and it was indefinitely postponed. The State Superintendent has accepted the demonstration and it is understood will introduce the same in Indiana text books. . . . Dr. Goodwin has his formula copyrighted not only in this country and also in 7 countries of Europe.

The *Chicago Tribune* had kept close watch on another bill before the Indiana Legislature, one which was introduced by E. I. Patterson of Franklin County, which would have made it "unlawful for any person or persons to engage in playing football in the State of Indiana" (January 23, 1897). It was noted that this was "the first measure thus far proposed that has met with applause when its title was read." This time the *Tribune* was supportive of the bill. On January 24 it stated, "This is a move in the right direction, and should be followed by similar legislation in other states. There is no room in a civilized community for demoralizing contests of this character." It did report (January 30) that "Colleges are getting together against the bill to stop football playing. DePauw University students had a meeting, and a committee was planned to lobby against the bill."

Before leaving the football bill one other item should be mentioned. In its column on "Views of the State Press" on its own editorial page, the Indianapolis *News* for February 11 reprinted the following item:

If football is killed in Indiana, hundreds of young men will go to more enlightened States for their education and the enjoyment of such athletic privileges as experience has demonstrated is beneficial to them.

This item in support of football originally appeared in—the *South Bend News*!

Perhaps this is an appropriate place to give one paper's final evaluation of the entire work of the 1897 Indiana Legislature. The following appeared in the *New Harmony Register* on March 12, 1897, and perhaps its political bias is showing!

(Special to *New Harmony Register*) The legislature died a natural death yesterday, without any blaze of glory. Its chief features were the seizing of everything in sight for Republican office seekers.

#### *The New York Herald Tribune and House Bill No. 246*

We are also able to recount the handling of the story in the *New York Daily Tribune*, where two editorial references appear. It should be noted that both of these appeared after the bill was terminated by the Senate. The second of these appeared on February 24, and is entitled "Vaudeville Legislators." It begins "An unusual number of freak bills have turned up in state legislatures this year," and then goes on to recount some of the more bizarre bills introduced in Missouri, Nebraska, and Indiana. Indiana was noted for, among others, the bill compelling hotels to print their bills of fare in English, and "a bill about the true method of squaring a circle, and though the Speaker cruelly referred it to the Committee on Swamp Lands, it has actually passed." The concluding paragraph is of particular note as a reflection on the times and the legislators of 1897 in much broader terms than just Indiana House Bill No. 246.

While these examples by no means exhaust the list of fantastic bills, introduced in various legislatures, they give a fair idea of

their character. The men who introduce these bills are classed as sane and sensible men, which only goes to show that sane and sensible men can occasionally do very foolish things. These vaudeville antics of state legislators do no particular harm, perhaps, but the time taken up in discussing such absurd bills is wholly wasted and the time of a legislator is paid for out of the pockets of the people.

An earlier article appeared in the *New York Tribune* of Saturday, February 13. The editorial is particularly relevant to our story as it was reprinted in the *New Harmony Times*, in its February 28 issue. We first give the editorial as it appeared in the *New Harmony* paper.

#### Squaring the Circle in Indiana

From the time when Euclid first passed the laws of geometry up till recently, no legislator has sought to amend it. To one who has studied history there is nothing surprising in the fact that these laws, so long held binding, were the enactments of one man, and not of the Legislature of Athens. That was the custom of the day, as it was shown by the legislation of Draco and Solon. In these democratic times, however, it is not unnatural that a legislative body, duly representing the people, should proceed to the enactment of other similar geometric laws. The Indiana General Assembly has, in fact, just done so. On Friday of last week it passed a bill providing that the area of a circle shall be and hereby is equal to that of a square whose perimeter equals that of a circle. This is the old problem of "squaring the circle" done away with by the will of the people. Great is the people when it arises in its might and majesty! At the same time down goes "pi," that enemy of youth, that wearisome number that begins 3.14 and continues beyond the utmost limits of patience. This law, if signed by the Governor, puts on the statute books the mathematical discovery of Dr. Goodwin of famous and destined to be more celebrated Posey County. To be sure, it makes the area of the Indiana circle somewhat smaller than that of the falsely pretentious circle of the rest of the world. Let us hope it does not similarly affect the volume of spheres, lest the real capacity of an almost spherical cranium may be much less than its apparent capacity.

New York Tribune.

The alert reader will note the mathematical error of the writer—an increased value of pi would increase the area of the Indiana circle. But the writer would claim literary license if not mathematical accuracy, for he had a point to make. The original editorial in the *New York Tribune* [18] contained one additional sentence, which was deleted in the *New Harmony Times*.

How seriously that would affect the head of Dr. Goodwin, which seems, by reason of its size, to be in irrepressible conflict with the confines of the universe!

The other New Harmony paper, the *Register* (this is the same paper which carried the two letters in 1880 concerning medical ethics), kept the progress of the bill before the home people, often using items from the Indianapolis papers. The fact that the terminology of the bill had been considered so complex was something which had to be corrected for the local readers, and so on February 19 it reprinted the first paragraph of the bill, preceded by this sentence:

It is probably the strangest bill ever acted upon by our legislature, and explains itself in the following clear, simple, comprehensive, and transparent manner: . . .

(Or was the editor's tongue in cheek?)

### Dr. Goodwin's Mathematics

It is not the purpose of this paper to attempt to analyze the mathematics of the circle as developed by Dr. Goodwin. It is appropriate to point to the crux of the matter, which really is not apparent if one reads only the statement of House Bill No. 246. Dr. Goodwin began simply by redefining a "circular area." In his contribution to the *American Mathematical Monthly* he begins:

A circular area is equal to the square on a line equal to the quadrant of the circumference; and the area of a square is equal to the area of the circle whose circumference is equal to the perimeter of the square. (Copyright by the author, 1889. All rights reserved.)

(Fortunately the copyright has expired!)

Of course the quadrature of the circle problem is to find a square whose area is exactly the same as that "enclosed by the given circle." Historically this problem was first presented as a geometrical construction problem, in that such a square was to be actually constructed by means of only compass and straightedge.

Having begun with a false hypothesis (really an incorrect definition), Dr. Goodwin was led to various conclusions, but none of these seemingly by deductive reasoning. Several newspaper reporters endeavored to pin the Doctor down on his mathematics, but he always worked his way out of the situation without giving any real answers. The *Sun* reporter does give the specific rules as Dr. Goodwin gave them to him:

To find the circumference of a circle: Multiply the diameter by 3.2. To find the area of a circle: Divide the circumference by 4 and square the quotient. To find the solid contents of a sphere: Divide its circumference by 4 and cube the quotient.

Just for the circle alone Dr. Goodwin thus introduces two errors—an incorrect circumference-to-diameter ratio, and then the incorrect assumption that a given perimeter, whether in circular or square form, would enclose the same area. In House Bill No. 246 this latter relationship is stated in the form of a proportion, which has led to the incorrect inference that he was advocating the value of 4 for  $\pi$ . Any

attempt to follow the Doctor's "logic" in any of his mathematical explanations is thus doubly compounded—one never knows exactly which figure he is referring to at any time.

### A Description of Dr. Goodwin

We are indebted to the reporter of the Indianapolis *Sun* for a vivid description of Dr. Goodwin as a person. Dr. Goodwin was interviewed by this reporter immediately after the bill had passed the House, and this report appears in the February 6 issue.

Typical of that era of the newspaper, the headlines are in five tiers and three different type sizes. Following are several paragraphs from the story. No explanatory comments are necessary!

#### A MAN OF 'GENIUS'

#### SOME FOLKS DON'T CALL IT THAT, HOWEVER.

Dr. Goodwin Pays no Attention to Their Taunts,

BUT KEEPS CLOSE TO HIS CROCHET WORK

And Hopes to See the Day When the World Will Believe His Theory  
of a Round Square or Whatever You Call It.

"If I live ten years, and I hope I shall, you watch out for Goodwin. My discovery will revolutionize mathematics. The astronomers have all been wrong. There's about 40,000,000 square miles on the surface of this earth that isn't here. Watch out for Goodwin if you live ten years."

These were the parting words which Dr. Goodwin gave a *SUN* reporter who called to ask him about the mathematical discovery presented to the state of Indiana in the form of a bill passed in the legislature, Friday afternoon. . . .

Dr. Goodwin is a tall angular man, and is stoop-shouldered. His hair is iron-gray and his mustache likewise. He wears a negligee shirt without necktie and buttons a long Prince Albert close up to his neck. He is nervous. While slipping off his tongue's end an avalanche of mathematical terms in explanation of his discovery, his left eye twitches, both eyes flash and his features are electrified with genius, or something akin to it. His face beamed for a minute when he was told that his bill had passed the house. But he avoids publicity, has avoided it all his life. He lives down at Solitude, Posey county, and prefers to be away from towns and noises. He stays in his room on Ohio St. most of the time. Occasionally he ventures out in the state house. In his room he has his pamphlets of lectures on the relativity of relations, etc., etc., solving problems of life and the universe that have made the sages of all times scratch their heads until they became bald.

On the bed in his room lay an old violin on which he plays the old-time tunes to beguile the passing hours of waiting until the world speaks regarding his discovery.

"I'm contending with a boycott of silence. That's what I have been through for many years," he said in explanation of his

struggles of the past few years. His story has it that his discovery is copyrighted in seven European countries, but that despite the truth of his find [*sic*], the world has been loth to recognize the value of it. Hence he speaks of the "boycott of silence." If men will only see that he has made a discovery, science will be transformed. . . .

Dr. Goodwin has ideas on other subjects than mathematics. He has studied force and demonstrated that Herbert Spencer has been on the wrong tack entirely. He offers rewards of from \$200 to \$10,000 to any person who will disprove assertions about his "law of life" and other things. If these prizes are not won by somebody by the time a certain period of years shall have passed, he's gone to set out on a lecturing tour and explain it all.

Dr. Goodwin doesn't belong to any church, but says he's close to being a universalist. He has ideas on the central idea of the bible, and can quote you as much from Paul as you like. It is the carnal in man, according to his views, that prevents terrestrial perfection. . . .

He has an acquaintance with many noted educators, and has never had any of them deny the truth of his assertions. This he takes to mean that he is right. He never votes, he avoids political discussions, and will return to Solitude to make more discoveries as soon as he can.

We have found no reference to Edward J. Goodwin in the period from the defeat of the bill until his death on June 22, 1902, some five years later. Perhaps he would have attributed this to the fact that he had been denied the ten years he had hoped for in order to revolutionize mathematics.

#### The Workingmen's Institute Library

One of the legacy's of William Maclure, who joined with Robert Owen in the early years of the Owenite experiment in New Harmony, was the Workingmen's Institute, for the self improvement of those "who work with their hands." Still in existence today is the library of the Institute, which together with a museum and art gallery houses many of the records and memorabilia of the early years of New Harmony. The building which houses the library was built in 1893, with a large share of the funds given by a more famous physician in the annals of New Harmony, Dr. Edward Murphy. The *New Harmony Register* for July 7, 1893 lists the items placed into the corner stone at that time—there is no listing of any manuscripts of E. J. Goodwin.

In the files of the library today is a three-by-five card, on which is typed "Goodwin, Edward J M.D. 1825-1902," and on which is pasted four newspaper clippings. Three are very brief items, clipped from the "Fifty Years Ago" column of the local paper, with a pencil notation indicating the original date.

Dr. E. J. Goodwin left New Harmony to locate in Springfield. (1880 May)

Dr. E. J. Goodwin, from Owensville, located here. (1878)

Dr. E. J. Goodwin died June 23—aged 77 years. (1902)

These items thus date back from 1952 to 1928.

The fourth item apparently is of somewhat corresponding date, although thus far we have not been able to complete identification.

#### Found In A Collection

Among the manuscripts left by the late Clarence Lichtenberger is a treatise on Squaring the Circle or to give the title the treatise bears, "Quadrature of the Circle," by Dr. Edward J. Goodwin, a former resident of Springfield. Dr. Goodwin was one of the noted men of Posey county a generation ago and possessed a nation-wide reputation as a mathematician, he having gained fame by his solution of squaring the circle problem. He delivered many lectures on the subject and attracted the attention of scientific men everywhere. However his theory failed to be adopted and he died disappointed not to see his dream realized.

It can be noted that the contribution of Dr. Goodwin to the *American Mathematical Monthly* was also entitled "Quadrature of the Circle." Mention will be made below of a book Goodwin had written on his subject, but we have no way of further identifying either of these items.

#### Obituaries of Dr. Goodwin

We have already indicated the absence of source material on Dr. Goodwin from 1897 until his death. That he continued in his belief of the truthfulness and value of his discovery until the very end we are able to verify.

There are two obituaries that we have been able to locate, printed at the time of his death and in the local newspapers. They stand in striking contrast to the polemic articles which appeared five years earlier in the Indianapolis papers, for these appeared in small newspapers, close to the people who knew him—and for them he was a prophet with honor in his own county! First, the obituary in the *Mount Vernon Western Star*, June 26, 1902. (Mt. Vernon is the county seat of Posey County.)

The many friends of Dr. Edwin [*sic*] J. Goodwin will regret to learn of his death which occurred at his home in Lynn township Sunday evening after an illness of about six weeks. He was 77 years of age and no one was better known in this county than the doctor, having given years of his time to mathematics and by so doing convinced many of the mathematicians of the country that by his principle he could square a circle. He leaves a wife, son and daughter to mourn his death.

But undoubtedly the most touching of all the items concerning Dr. Goodwin is the story in the *New Harmony Times*, Friday, June 27, 1902.

End of a Man Who Wanted to Benefit the World



Dr. Edwin [*sic*] J. Goodwin died at his home in Springfield Sunday, aged 77 years. He had been in feeble health for some time and death came at the end of a long season of illness. Dr. Goodwin was no ordinary man, and those meeting him never failed to be inspired by this fact. He was of distinguished appearance and came from Virginia where he received an excellent education.

He has devoted the last years of his life in an endeavor to have the government recognize and include in its schools at West Point and Annapolis his method of squaring the circle. He wrote a book on his system and it was commented on largely and received many favorable notices from professors of mathematics.

He felt that he had a great invention and wished the world to have the benefit of it. In years to come Dr. Goodwin's plan for measuring the heavens may receive the approbation which was untiringly sought by its originator.

As years went on and he saw the child of his genius still unreceived by the scientific world, he came broken with disappointment, although he never lost hope and trusted that before his end came he would see the world awakened to the greatness of his plan and taste for a moment the sweetness of success. He was doomed to disappointment, and in the peaceful confines of village life the tragedy of a fruitless ambition was enacted.

Dr. Goodwin leaves a widow, one son, John Goodwin, and a daughter, Mrs. Clifford Thompson. The funeral occurred Monday from the home in Springfield.

Dr. Goodwin is buried in Moore Cemetery, near Farmersville, Ind., on the New Harmony-Mt. Vernon road. His grave is marked with a medium-sized tombstone, with the family name GOODWIN. Underneath is inscribed his name, Edward J. Goodwin, Dec. 30, 1824, June 22, 1902. Beneath that is still another inscription—not, as perhaps you have dared to hope for—a “squared circle,” but the words

“Crowned with mercy, O how sweet will eternal friendship be.”

When Dr. Edington wrote his paper on House Bill No. 246 he said, “My purpose in presenting this paper is to have on record in an accessible place the facts concerning this most interesting piece of attempted legislation. The drawing of morals I leave to others.”

We close in similar open-ended fashion. For clearly there are different morals to be drawn—by different persons: professional mathematicians and scientists, newspaper editors, legislators, the-common-man-in-the-street. But let us not expect any from the circle squarers themselves—we cannot break through into their phantasy land!

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