►The following special article was prepared at my request for this YEAR BOOK. – Ed.◄

CURRENT STATUS OF ACUPUNCTURE IN SURGERY, OBSTETRICS AND GYNECOLOGY

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The ancient technic of acupuncture, riding in on the greatest tidal wave of publicity ever accorded a medical "innovation," is likely to become another tool in the therapeutic armamentarium of the obstetrician and gynecologist. Though interest in this fascinating therapy is rapidly expanding worldwide, there is a paucity of controlled studies, particularly as to its effectiveness in obstetric and gynecologic disorders.

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Scores of questions are being asked. What is it? How does it work? Who should use it? Is it safe? What kinds of conditions respond to the method? More definitive answers should be available after the mechanisms in acupuncture are carefully assessed and its clinical efficacy subjected to the rigid scrutiny of scientific investigations. Until these are done, acupuncture should not be dismissed as a hoax. Even if it turns out to be another form of placebo therapy, it does work–particularly for the Chinese–for reasons to be mentioned. Medical science is replete with procedures that were effective long before it was discovered how they worked. Yet it is surprising that the 1,000,000 or more acupuncturists who use it all over the world cannot explain its modus operandi.

As to what it is, there are five types of acupuncture–all supposedly equally effective: (1) moxa or moxibustion (ignipuncture), the burning of mugwort at the recommended points; (2) the ancient method of cupping or suction to produce counterirritation; (3) thumb-finger pressure or massage at the points; (4) the highly publicized twirling, at about 120 "cycles" per minute, of needles inserted in the points along the meridians; (5) needles electrically stimulated at a low frequency rate varying from 45 to 400 Hertz. The number of acupuncture points on the twelve meridians are estimated to range from 365 to 100,000. To confuse matters even more, there are eight or nine different traditional needling technics. Each one is supposed to produce different effects at the same point. Then, too, part of the therapy includes the Chinese cosmogony involving the maintenance of the organism's equilibrium–the all important yin and yang.

Before further discussing what acupuncture is and how it works, it must be mentioned that acupuncture for medical conditions in China is combined with herbal medicines and tender loving care. To these are added the best features of Western or modern, scientific medicine. Dimond,[1] one of the first Western scientists to witness acupuncture as practiced in the People's Republic of China, states, "A great deal of it is plain psychotherapy for psychosomatic disorders." The whole person is treated by consideration of physical factors as well as mental ones. This excellent and comprehensive approach for alleviation of medical disorders should be differentiated from acupunctural analgesia (AA), the correct term for obtunding pain associated with major surgery. Over 500,000 surgical procedures have been performed in the People's Republic of China during the past 12 or more years–a remarkable feat that certainly requires explanation.

I have reviewed the proceedings of the last National Institutes of Health Acupuncture Research Conference,[2] which reported the latest findings of almost 60 leading investigators in the Western world. A large body of experimental data was explained by mutually contradictory theories and, in general, equivocations as to what it is, how it works and its clinical value. Most of the experimental procedures were poorly designed or poorly controlled, or both. One participant[3] studying pain relief said, "I don't believe it is possible to have a true double-blind experiment; . . . bias could not be excluded; . . . many sources of nonverbal signaling are available; . . . our acupuncturist appeared more interested and expectant on the true acupuncture trials than the placebo acupuncture trials (avoiding the points)."

Since I am a non-Oriental, my bias, too, can affect the validity of my formulations. Nevertheless, even though I may not have all the answers, I believe that the hypotheses presented below as to what acupuncture is and how AA works are the most plausible ones advanced thus far. My conclusions are based on having studied reports from American observers and Chinese scientists. Also, I have observed acupuncture in the Far East and the United States and have studied the official films of surgery performed in the People's Republic of China. Additionally, I have had over 40 years' experience in using various types of suggestive procedures for relieving psychosomatic gynecologic disorders,[4] mitigating the pains of childbirth[5] and major surgery.[6]

The thrust of my discussion now will be directed to how AA works. Significant variables responsible for performing major surgical procedures without the use of conventional analgesia or anesthesia will be briefly described. The antecedent variables are: (1) a 5,000 year belief system; (2) suggestive effects of the impressive charts, mannikins and models with their meridians and spots; (3) Mao's *New Thought Directives* and teachings to eliminate or reduce anesthesia (he is a kind of diety and his words are gospel); (4) ideologic fervor, evangelic zeal of the masses resulting in patriotic adherence to Maoistic doctrine; (5) generalized stoicism of the Chinese people; and (6) belief that the State, which has done so much for the people, knows what is best for them.

Mao, by his great wisdom, has unquestionably brought the more than 850,000,000 Chinese people a fine delivery of health care services. Patients read Chairman Mao's *Little Red Book* while undergoing surgery. Its many practical suggestions and admonitions act as a powerful reinforcing agent. The omnipresent pictures of Mao further heighten patient acceptance of his wisdom, which is interwoven with political ideology. The bowing before Mao's picture on completion of the operation is positive proof of the reverence with which his teachings are accepted.

The intervening variables are: (1) strong rapport, (2) motivation, (3) belief and confidence processed into conviction that AA will work and (4) belief that the doctors or acupuncturists must serve the patient. The covert suggestions of the doctors and acupuncturists therefore reinforce the patient's beliefs to bring about conviction of success. When suggestions are subliminal, they bypass criticalness and are readily accepted. These may be verbal, nonverbal, intraverbal (intonation of voice) and, the most effective, extraverbal (implication of words).

The dependent variables are: (1) special selection of patients and a mock preoperative rehearsal of various steps of the operation in and out of the operating room by the same surgical team; (2) frequent group training of the candidates, with the resultant "emotional contagion" initiating a strong desire to please the group leader; (3) the subtle mobilization of competitiveness that develops in a group; (4) frequent administration of some type of preoperative medication, analgesic agents such as sodium pentothal and Novocain often being used singly and in

combination before or during surgery; (5) ritualistic placement of the needles; (6) the warmth, numbness and throbbing produced by the twirling needles, with the resultant vibration acting as a powerful distraction of "misdirection of attention" (the "competitive inhibition" proposed by Chinese scientists, a strong stimulus—the needles—replacing a weaker one—the pain); (7) the teaching of Yoga breathing and relaxing exercises for induction of calmness (Yogins and Sufis have used breathing exercises and rituals for painlessly passing knives through their bodies). All of the above variables are mentioned to correct the impression spread by our lay and medical press that acupuncture is the sole agent for pain relief during surgery.

Chavez and Barber[7] have advanced a six-factor theory similar to those mentioned in my prior publications on AA[8-11] except these authors do not mention hypnosis. This is because they believe that all the phenomena attributed to "hypnosis," particularly anesthesia, can occur without postulating the need for the concept of a "sleep state," "unconsciousness" or a hypnotic "trance" or even the necessity for a formal induction procedure. However, they emphasize the role of suggestive factors. They state that AA is no mystery inasmuch as the factors are already known but merely have been overlooked by Western scientists.

Many (including myself) have effectively blocked surgical pain without alteration of consciousness by Schultz's autogenic "desensitization" training[12]—a form of autohypnosis in which the subject utilizes a sort of "dry run" or rehearsal of the intended surgery. The late Dr. Paul Dudley White, after hearing about autogenic training while attending my lecture on acupuncture at Massachusetts General Hospital, told me, "Now I know what the surgeon meant when he said, 'It was the patient who helped me.'"[13] Doctor S. T. DeLee and I performed the first cesarean section-hysterectomy ever reported *without analgesia or anesthesia*,[14] simply by using autogenic training. We called the method "hypnosis" for want of a better term. Other major surgical procedures performed through this technic have been documented.[15] Nociceptors in higher brain centers, when experientially conditioned under autogenic training, protect the patient from surprise, fear and tension and thus automatically raise the pain threshold. Many scientists unfamiliar with this approach do not realize that autogenic training is a form of autohypnosis.

Opponents of the acupuncture-hypnosis theory think of the latter in terms of a "sleight-of-hand effect," unfortunately inferring that hypnosis fits into a Svengali-Trilby-Rasputin model. They are completely unaware that hypnosis readily can be produced without a ritual.[16] As proof, it can be adduced that hypnosis is a patient-centered response mechanism rather than a doctor-directed one. This theme was elaborated on in an article entitled "It's Indeed a Wise Hypnotist Who Knows Who Is Hypnotizing Whom."[17]

Others contend that AA is *not* due to any kind of suggestion or hypnosis because it is used on a variety of animals. Ignored is an extensive literature on "tonic immobility," or the fright reaction, erroneously called "animal hypnosis."[18, 19] The associated catalepsy allows many animals to be operated on relatively painlessly when held in restraint. Those who cite that infants respond to AA and therefore are not amenable to hypnosis or Maoistic teachings are not aware that swaddling or restraint produces the "still reaction," often with resulting analgesia.[20]

Others[21] note "an excellent correlation between hypnotizability and responsiveness to acupuncture." Ulett[22] states, ". . . there is nothing in the literature contradicting our opinion that AA is a form of hypnoanesthesia." Spiegel[23] states, ". . . acupuncture is largely hypnosis." Forest mentions that the assertion that AA uses features of hypnosis is difficult to dispute. Wall, co-developer (with Melzack) of the "gate theory" used to explain the neurophysiologic basis for pain inhibition by acupuncture, says, ". . . there is not one scrap of anatomic or physiologic evidence of such a system [meridians and spots]."[24] He states that when tests are carried out they will show "that acupuncture does not generate the specifically pain-inhibiting barrages for which I was searching." He feels that these selected and highly preconditioned patients are being hypnotized. He further adds: "In my opinion, acupuncture is an effective use of hypnosis. This does not diminish the value of acupuncture, but places it in a framework with which we are partially familiar."

Mann[25] stated that suggestion may be integral to AA. He showed that the patient's belief in the effectiveness of acupuncture is crucial to its success. Acupuncture failed to produce analgesia to deep pinpricks in 90% of subjects who were *not* told that it would be effective. Chavez and Barber[7] ask, "Why is the 'gate' capable of reducing the pain in China but incapable of reducing the pain of pinpricks in England?" Katz[26] noted a correlation between hypnosis and AA. He states, ". . . this correlation does not necessarily prove a cause-effect relationship but may indicate that they are parallel processes."

Saltoun[27] mentioned that Novocain or Demerol was used in most of the operations. He asks, "Is it the acupuncture needles or the concomitant Western medication that produces the analgesia?" He believes that AA is "a mixture of indoctrination. . . . that acupuncture removes pain coupled with a sort of mass hypnosis." DeBakey[28] noted that the same type of operation was performed at different hospitals with different technics and "it did not seem to make a great deal of difference where the needles were inserted." He, too, cites the universal use of Novocain. He believes that the calm behavior is a form of mass self-hypnosis. Tarpale and Tarpale[29] observed that acupuncture has many features of hypnosis—an opinion not shared by the Chinese doctors.

Melzack and Wall[30] have emphasized the role of perceptual and cognitive factors in modulating pain perception. Melzack[31] recently stated "every culture on every continent has developed its own type of acupuncture." Shamanism, voodoo, Yoga, Zen and many other healing methods heal by conviction. Conviction of cure leads to cure! Thus, the explanation for the Chinese puzzle falls into the realm of conviction phenomena—a sort of "tribal medicine." Conviction results when well-conditioned people have a "logical incongruity," where they buy things that do not add up.[32] However, I am not denigrating acupuncture, be-

cause in the environment in which AA is used, it is the method of choice. I am only respectfully explaining how it works—in the People's Republic of China.

With reference to who should use it, there is no question that if acupuncture is going to be accepted as a meaningful tool in the Western world, it should be done by skilled practitioners trained in acupuncture theory and medicine. Chang Weih Sun, director of Peking's Friendship Hospital, says that acupuncture should not be used uncritically; a differential diagnosis should be made. The present picture of acupuncture in the United States is somewhat ominous. Many physicians are being bombarded with calls from frantic people looking for a miracle cure for all types of complaints. False hopes are being generated. Practitioners of acupuncture, especially those who are not physicians, will try to take advantage of the vague laws and guidelines. Those seeking relief of the backache or pains will journey to the Lourdes of acupuncture and throw down their crutches and canes, not realizing that it is not the shrine that cures, but their own inner belief. Untrained acupuncture "specialists" may not discover hidden serious ailments; lifesaving therapy may be delayed. Some patients will die. Many will suffer needlessly. Others will complain. Already the cycle is plain to see.

With reference to its safety, the risks to life are minimal. Hepatitis from improperly sterilized needles may occur. The accidental penetration of a blood vessel resulting in hematoma may pose a problem. Since acupuncture has been used for over 5,000 years, the acupuncture points have been refined and chosen by trial and error to avoid hitting major blood vessels or nerves. If the needles are placed along the body axis, particularly on the back, syncope reportedly may occur. However, AA has no dangers or side effects comparable to anesthetic agents.

The old Chinese texts stressed that acupuncture should never be used during pregnancy, for fear of inducing premature labor or abortion. Chen[33] states that the Ho Ku points on Large Intestine 4 meridian and the San-Yin-Chiao (Spleen 6) point are very dangerous in pregnant women. If these points are stimulated for a long time, abortion is induced.

Ledergerber[34] is the first American investigator to evaluate and confirm the uterine-stimulating effect of electric current (electroacupuncture) applied to specific points by monitoring and measuring the pressure in the amniotic fluid. The stimulation points were on the Conception Vessel, Spleen and Bladder meridians. The closer the points were to the uterus, the stronger the effect. The most potent point was Conception Vessel 5—the so-called "forbidden point." The Chinese claim it can terminate pregnancy. Ledergerber painstakingly mapped out other stimulation points. Conception Vessels 3 and 4, Spleen 15 in the Spleen meridian on each side of the umbilicus and Spleen 6 were, in that order, almost as powerful. In the Bladder meridian the points close to the uterus over the sacral nerves, Bladder 31, 32, 33 and 34, also are powerful stimulators. More distant points in meridian Bladder 60, 66 and 67 are also good stimulators. Taking the above mentioned precautions into consideration, acupuncture is a reasonably safe procedure for pregnant women if undertaken by a qualified acupuncturist in a medical center for research purposes.

The chief utility for acupuncture in obstetrics in the Western world will be for relief of pain, potentiating chemoanesthesia in labor and delivery, induction of labor and as an analgesic agent for performing abortions and dilations and curettages. In gynecology, its prime indications will be for alleviating the psychologic component of dysmenorrhea, menstrual migraine headache, frigidity and low back and pelvic pain. As yet, there are only ancedotal reports in most of these areas.

Results from small samples indicate that acupuncture is twice as effective as placebo treatments for relief of painful backache. There are no long-term follow-ups and the widespread publicity unquestionably has raised the patients' expectancy level. Also, too, insertion of a needle under these circumstances by an attentive physician definitely has a more potent effect than a parenteral injection or an orally ingested tablet. Pain is a highly individual matter and subjective reports of improvement are not good criteria for judging results. More important, do pain-ridden patients function better after being relieved? Such objective data would negate patient suggestibility, operator attitude or bias. Already it is noted that Oriental acupuncturists have better results than Caucasian acupuncturists. If the patients are Orientals, results are still better. Acupuncture for pain relief is surprisingly close to the placebo effect.[35] Crue[36] observes that 70% of patients with severe pain of terminal cancer obtain relief with sympathetic attention and dedication of the physician alone. It is acknowledged that tender loving care acts like a placebo-hypnosis effect.[37] Acupuncture, like hypnosis, then can be used to reduce or replace addictive analgesic or narcotic medicaments for acute or chronic pain syndromes.

Electroacupuncture has been used as the sole anesthetic for performing abortions.[38] This would be indicated in patients allergic to local anesthesia or for whom general anesthesia is contraindicated. One must remember that criminal abortions have been done on countless women without any analgesia or anesthesia, and with surprisingly little discomfort. The author has performed many dilations and curettages with only suggestion and/or hypnosis per se.

There are only a few references to acupuncture for obstetric analgesia. The best sources available in China emphasize that it is the cultural norm for women to have babies without pain; therefore, acupuncture for obstetric analgesia is considered abnormal. Sharply lower maternal and neonatal mortality and morbidity can be expected in China. The late J. B. DeLee, like Mao, promoted the idea that labor is naturally painless and should be a normal and pleasurable experience. He said that the normal woman in normal labor should have no more pain than she is willing to bear, and any pain in excess of this is produced by fear and anxiety. He advocated the elimination of the term "labor pains" from our vocabulary and felt that if women were not told about the "pain of labor" by older but well-meaning females, they would do better. Sagely, he stated that it would take generations to breed out this idea of "pain" and thus change traditional attitudes and behavior pat-

terns not only in prospective mothers, but also in the medical profession itself. Perhaps this is what the Cultural Revolution is attempting in China.

Shnider[39] has started an elaborate study of acupuncture measuring a wide range of physiologic and psychologic parameters. He plans to have one randomly selected group act as a control; the needles will be inserted at sites other than the acupuncture points. Thus far, of 6 patients treated with acupuncture, 2 had moderate relief of pain in early labor, 1 had mild relief and 3 had no relief. The most effective analgesia was produced when he needled Bladder 32 point on the back, which is over the S2 foramen. Needling at this point seemed to help 3 patients. He plans to modify his acupuncture technic, using constant stimulation of each point for 20–30 minutes (electroacupuncture).

Palahniuk[40] questions the usefulness of acupuncture in labor. Whereas acupuncture gave some pain relief in early labor, it failed to do so after the end of the 1st stage in 9 of 10 patients. Needles were inserted in 4 points on the hand, on the medial side of the lower leg and on the lateral side of the leg. Also, some were inserted on the back over the 1st and 2d sacral foramens and at the uterus point. The latter point is not on any meridian, but is inferior and medial to the anterosuperior iliac spine. Number of points varied from 3 to 7, and a total of 6–14 needles were manipulated manually. Acupuncture was not used for delivery as the points differ from those used during labor. Despite failure to provide pain relief in all but 1 case, Palahniuk will study another group using electroacupuncture. One might posit that electric driving of the needles per se at so many points is sufficient distraction to ameliorate discomfort during labor.

Ledergerber[34] reports that results were poor in his first 5 cases when he used manual manipulation of the needles. He then switched to electroacupuncture. Of 15 cases, 6 were completely successful (no medication or anesthesia for labor, delivery or episiotomy and forceps). Four patients were multiparas and 2 were primiparas. Three cases were partially successful; no medication was required during labor and only a small amount of local infiltration was necessary around the rectum. Six were failures, but these patients were either fat or frightened.

In an elegant study to see if electroacupuncture was safe for mother and baby, Ledergerber monitored amniotic fluid and the fetal ECG. During the 1st stage, he used points on the mother's feet. He connected Stomach 44 to Spleen 6 with an electric current, inserting 2- to 3-in. needle in the latter point. With a needle in Liver 2 and 3 points, he connected it with the electric current to Bladder 60 or 66 point. In the 2d and 3d stage, difficulties arise inasmuch as most points used for perineal anesthesia are also uterine stimulators. Therefore he stimulated Bladder 21, 22 and 23 with two 3-in. needles in the bladder meridian for relief of labor pains and backache. He also places two 3-in. needles over the sacral nerves (Bladder 31, 32, 33 and 34). These points produce vaginal and perineal anesthesia. Care must be taken not to stimulate the sacral nerves, as this causes strong uterine contractions. However, they can be stimulated after delivery to achieve the desired anesthesia for repair.

Ledergerber, a well-trained and careful researcher, is certain that the important variable is the type of electric current used. He mentions the work of Limoge, in France, who uses electroanalgesia consisting of a low frequency square wave of 75 Hertz associated with a high frequency square wave of 200 kHz at 3 ma. and 15 v. Combining these two currents allows perfect analgesia and avoids unwanted side effects. Limoge also obtains electroanalgesia by means of disk electrodes placed at certain localized regions similar to traditional acupuncture points. Though the disks are not precisely placed over the acupuncture points but near them, significant surgical anesthesia is achieved. Prophetically, Ledergerber predicts that in the next decade electroacupuncture and electroanesthesia will be used for most deliveries. I am familiar with current research in electroanalgesia and anesthesia and am confident that these modalities will play an important role in obstetric analgesia and anesthesia.

There are several reports on the use of acupuncture for the induction of labor as well as the inhibition of premature labor. Lee[41] induced labor in a patient with manual insertion of needles, but Pitocin was required at 8 cm. He used three points, two on the leg and one just 2 in. above the pubis on the midline or Conception Vessel meridian. Also relieved in this patient were low back and anterior thigh pains during labor and delivery.

Ledergerber is the first investigator to induce labor by using acupuncture points and an electric current. While searching for uterine stimulating acupuncture points with his neurometer, using 9 v., he noticed an immediate uterine contraction. Electric induction of labor had been used after 1803, but was discontinued because of fetal complications. For induction of labor, Ledergerber ruptures the membranes first. Then he touches the stimulating points on Conception Vessel 3 and Spleen 15 with his neurometer, applying a 12-v. electric current at 200 ma. every 3 minutes for 15 seconds. If not successful, he uses needles and electric current, 9–12 v. at 100–300 pulses per second. Fetal ECG and amniotic fluid pressure are internally monitored. He induced 12 patients at term with ripe cervices with 100% success! Average induction time was 30–60 minutes. He then induced 5 patients because of medical indications. All had unripe cervices. He was successful in 3 and failed in 2. He warns that Pitocin should not be used with electroacupuncture as the electric current potentiates and is potentiated by oxytocin. However, oxytocin may be used after electroacupuncture failure. Ledergerber is to be congratulated for developing what appears to be a new method for induction of labor. His experiments on a larger sample should yield significant data as to safety and reliability of the method. If his data can be replicated, then electroacupuncture must involve a neurophysiologic theory that obviously does not incorporate any type of suggestion.

Studies are being conducted on other psychosomatic gynecologic disorders. The author predicts that the success rate will be about identical to the rate achieved by suggestion and/or hypnosis. Also, the prior indoctrination associated with acupuncture will have no better results in relieving surgical pain in the Western world than suggestions used to induce hypnoanesthesia. It is no mere coincidence that, at present, the mechanisms involved in acupuncture and hypnoanesthesia are as yet

poorly understood—they may be opposite sides of the same coin. They differ only in their method of induction; for the former needles are used instead of words. Both have been around for about the same length of time. It might be better if both were combined: the subsequent synergistic effect might revolutionize the practice of obstetrics. This would require anesthesiologists being conversant with both methods. Reducing fetal hypoxic anoxia would have a salutary effect on the practice of obstetrics and be a boon to humanity.

At this point in time, however, uniting the two is difficult. Acupuncture has had a tremendous press and has been hailed as a panacea. Hypnosis is still surrounded with irrational prejudice and ignorance even in high medical circles. The laity still thinks of it as a "black art," even though "hypnosis in slow motion" is the basis for the natural childbirth, Lamaze and Velvoski and psychoprophylactic relaxation methods. Esdaile,[42] at the beginning of the last century, reported hundreds of formidable surgical procedures in India performed by mesmeric anesthesia—all before the advent of modern anesthesia. Has magnetism, the precursor of hypnotism, been replaced by "needleism"?

In summary: (1) very responsive subjects are selected for AA; (2) "waking" responsiveness to suggestions is higher in such persons than commonly assumed; (3) the prestige of the doctor or paramedical worker makes it clear to patients that a high degree of responsiveness is desired and expected, and therefore a subtle placebo effect operating in pain relief must be considered; (4) electroacupuncture may have considerable value in alleviating the pain of labor and delivery and seems to be capable of inducing labor; (5) acupuncture has no more than a placebo effect in the relief of gynecologic conditions and no doubt would be potentiated by being combined with hypnosis; and (6) the cultural setting facilitates or enhances suggestibility. The latter factor is the crucial variable and, therefore, requires a fuller explanation.

Thus, we should compare, if possible, the cultural demand characteristics (expectations of leaders and masses) as they appear in a regimented society with the demand characteristics as they exist in the Occidental world. This accounts not just for variations in hypnotic phenomena but variations in relationship to the broad spectrum of psychologic experiences that have to do not only with well-known placebo responses but also more basic aspects of psychobiologic functions, such as attention, concentration and perceptual awareness.

In a regimented society, the demand characteristics function in such a way as to bring about compliant behavior *without* overt cooperation or motivational involvement being necessary. In a nonregimented society, there is much less evidence that compliance will be obtained unless cooperative behavior is elicited via either strong interpersonal relationships or reward inducements, as Mao Tse Tung's *New Thought Directives*. Thus the entire concept of acupuncture relates not only to hypnosis but the whole aspect of behavioral shaping, in keeping with some of Skinner's contributions on operant conditioning. Acupuncture is decidedly within the whole realm of the forming and shaping of adaptive behavior.

Lao-tse, the Chinese philosopher, 2,400 years ago wrote, "When the water is muddy, who can settle things? Only wait, and it will become clear."

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