THE SISQUOC DIATOMITE FOSSIL BEDS

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This paper provides a first hand report of diatomaceous earth beds located in the Lompoc area of Santa Barbara County, California. Although historical geologists have maintained that these beds formed gradually over vast periods of time, they actually provide striking evidence of catastrophic origin.

Here billions of delicately sculptured glass cell walls of diatoms have been deposited in such a way that fish were entombed with bones and even body organs intact. Some fossil fish studied were trapped so that they lie parallel to the bedding plane of the diatom matrix but many other fish extended across the bedding plane. The latter fish (standing partly "on end") must have been buried quickly or else the part not buried at first would have decayed long before it could have been covered by a diatom "snow." Fossils of various fish, sea birds, and whales also indicate that the diatom material was deposited rapidly and catastrophically rather than by gradual and uniform activity.

It is postulated that the original diatom supply was first formed in cool waters after the flood. A mechanism is proposed whereby the original diatom supply was redeposited at the Lompoc site during a postulated post-flood catastrophe involving continental movement in the days of Peleg (Genesis 10:25).

Introduction

One of the evidences commonly used in the classroom to imply necessity of extended geological chronology is the remarkable accumulation of diatomaceous earth in the Lompoc area of Santa Barbara County, California. Recently the author investigated these very extensive deposits to make a critical examination of the field evidences, suspicious that uniformitarian dramatization, oversimplification and distortion may have misrepresented the facts.

The student is usually told that these extensive beds, built up of the skeletons of microscopic, silica-collecting algae of the sea, are the normal result of the long, still, silent rain of death that is constantly taking place in the oceans today.[1] For this remarkable deposit (which extends from 200 feet below sea level[2] to more than 1,500 feet above sea level in places) to have attained this thickness, historical geologists estimate an accumulation period of from 33,000 to 1,500,000 years. This is estimated to have been between two and five million years ago.[3]

These estimates are based upon argument from the present rate of deposition, without any consideration of indications that this deposit is not at all an accumulation at present rates. It is simply a calculation based upon ocean basin deposition, which is variously estimated to be taking place at a rate from 1/500 of an inch per year to as much as ½ inch per year. On this basis, 66 foot samples from the Atlantic Ocean floor have been estimated to represent as much as 1,500,000 years.[4]

The deposition estimate for the Miocene Sisquoc formation, as these diatom deposits are called, is undoubtedly also based upon assumptions concerning fairly stable ocean temperatures and currents. Neither does it appear to take into consideration such factors as the diatom's recently observed reproductive spurts, reproducing by division among ice crystals in frigid sea water at -1.75° Centigrade.[5]

While the number of diatoms in the great oceans may reach as high as 100,000 per quart, this is dwarfed into insignificance by the noteworthy discovery of a phenomenal 6,330,000 diatoms found in a liter of sea water in the Kiev Canal in Russia.[6] This multiplication in cold waters is one reason for the abundance of whales in the Arctic, since the diatom and the chain of life supported by it provides much food for the great creatures.[7] (Editor's Note: Obviously, if during the ice age following the flood reproduction of diatoms were at the rate of those in the Kiev Canal, then the mentioned estimate of 1,500,000 years would be reduced drastically.)

It would be impossible, of course, for one to field-check abundance of diatoms in sea water of the Miocene epoch during which the bulk of the Lompoc deposits were supposedly made. Neither is it possible to estimate water temperatures during those deposits nor at the time the diatoms lived. These must be differentiated, for the diatom ooze was undoubtedly built up long before the event which brought this onshore deposit into being. Probably a good paleontologist could evaluate the types of diatoms found, and together with the evidences presented by the fossilized herring mackerel, perch, whales and even sea birds contained therein, form a reasonable estimate of water temperatures during both growth and redeposit.

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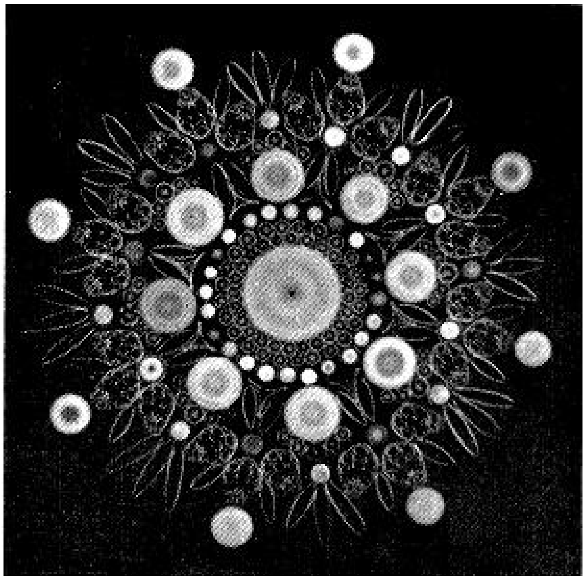

Figure 1. Enlargement of remarkable arrangement by J. Rinnbeck of 266 diatoms, scales and spicules (pin head sized). (Courtesy of Karl Dern.)

A field trip demonstrated that evidence was entirely and indisputably out of harmony with the normal classroom presentation, so much so that it reminded one of the story of Plato's cave. According to the sage, an observer was fixed with his back to the mouth of a cave, knowing only those truths about the world outside which he could deduce from the shadows on the inner walls of the cave.[8]

I am convinced that reality in geological time has been grossly misrepresented on the walls of the contemporary science classroom by the deceptive shadows of evolutionary uniformitarian time values.[9] At Lompoc this distortion is remarkably evident. The fossils that were trapped in the abrupt deposition which left this unique graveyard tell a story violently contradictory to the classroom interpretation. Every fossil found supports a denial that it had been buried at a geological "snail's pace."

Diatomaceous Beds Described

These deposits at Lompoc contain some of the worlds most beautiful examples of fossilization. The researcher finds it easy to forget that entire mountains under his feet, glistening white, dull grey, very soft pink or occasionally nearly jet black in veins, are entirely composed of fossils. Because of their microscopic size, these little cell wall skeletons of purest glass, massed together inestimable quantities, simply appear to be a delicate chalk-like clay. Yet this dia-

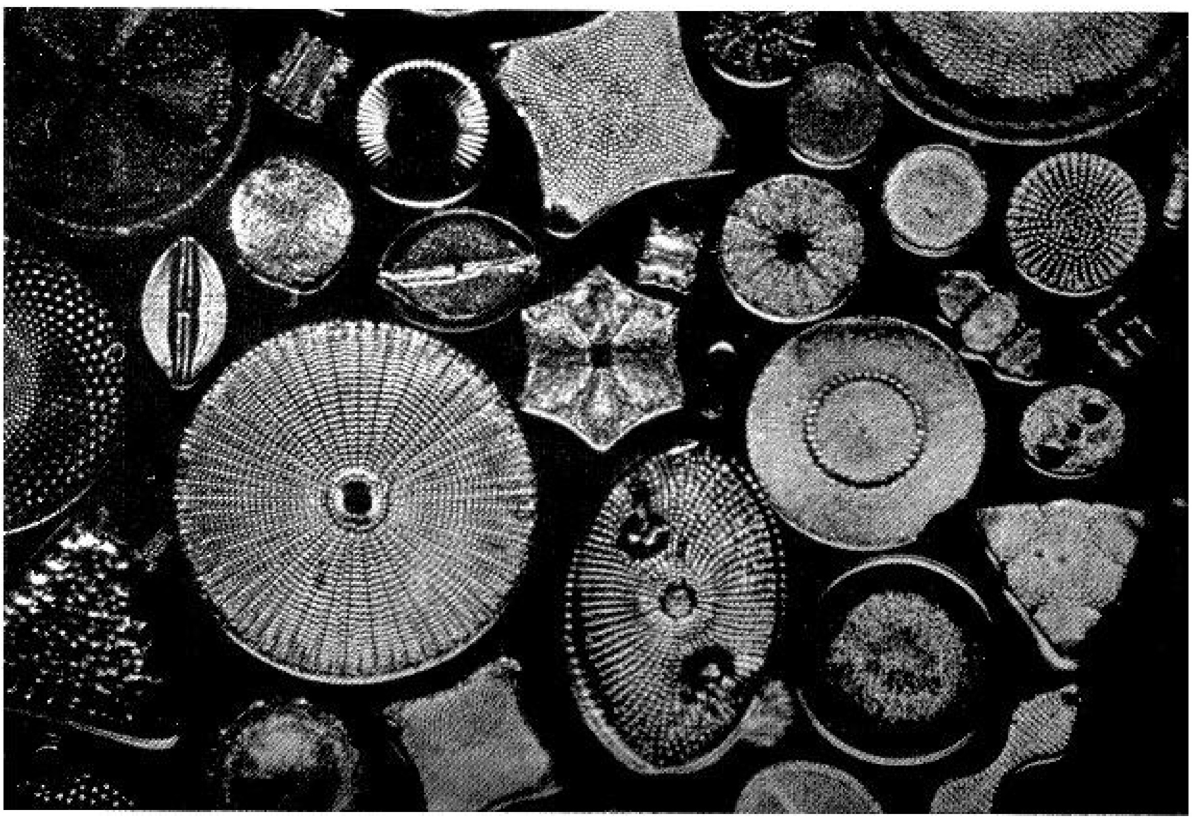

Figure 2. Photomicrograph of a collection of diatoms. (Courtesy of Horace Nelson.)

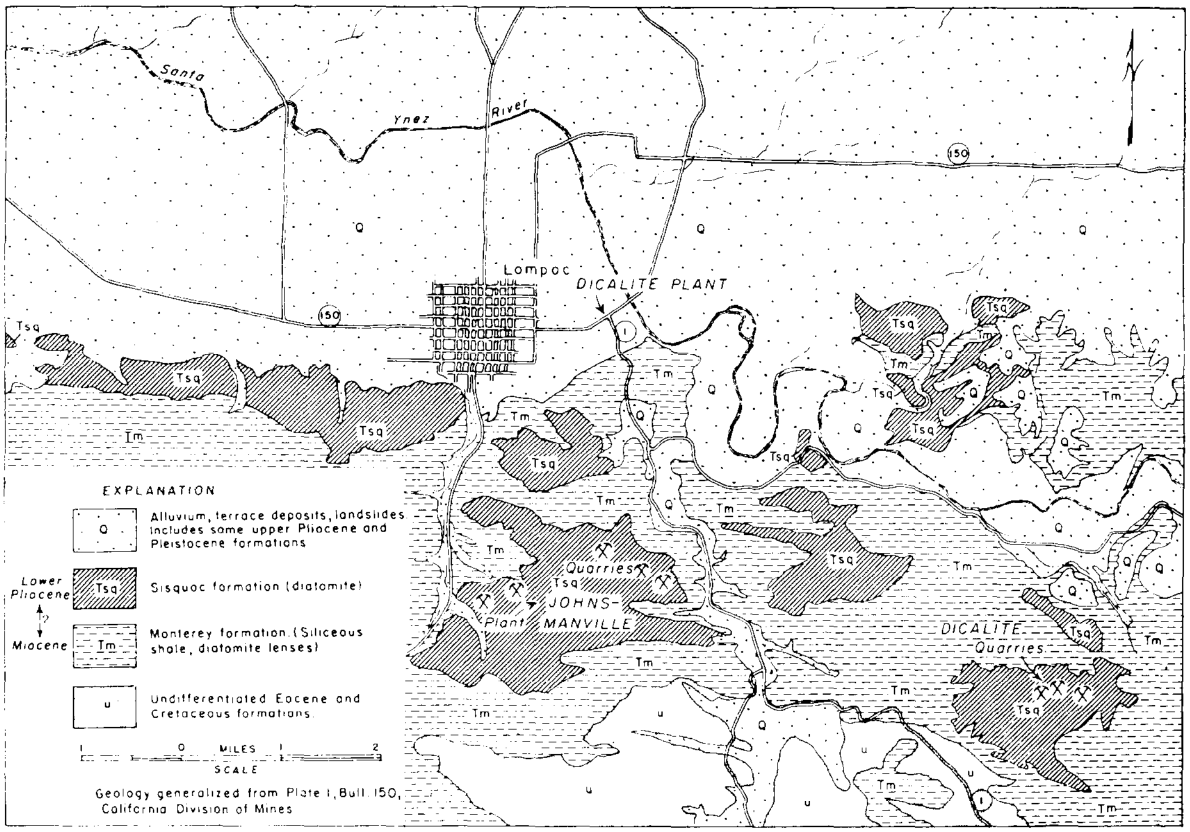

Figure 3. Geologic map of Lompoc area, Santa Barbara County, showing distribution of diatomite-bearing Sisquoc formation. From "Mineral Commodities of California" by O. P. Jenkins. Bulletin 176, California Division of Mines, December, 1957. Used by permission.

tomaceous earth is of a gently compacted mass that is often in the form of almost absolutely pure opal fossils.

The delicate individual size of diatoms is shown by photomicrographs of a diatom arrangement in Figure 1 (which also includes some scales of sea urchin and sponge spicules). This remarkable arrangement by Rinnbeck includes 266 separate items, although it is actually the size of a pinhead. It was among a series of microscope exhibits displayed at the Philadelphia centennial years ago. The original microscope slide is in the possession of Karl Dern, a retired employee of Johns Manville, who now lives in San Mateo, California. (See also Figure 2.)

Strangely, in the pure beds of silica, both in Johns Manville's deep quarry and on Dicalite's high Brush Ridge, there are obsidian-like streaks of dark brown to black bands of thoroughly cemented opal. (See map, Figure 3). Though rarely of soft gemstone quality, they display concoidial fractures when shattered. No meaningful explanation has been found for this veining phenomenon.

It is easy to speculate that these thoroughly hard veins resulted from subsurface percolation of mineral saturated waters. That later crustal movement has compressed and heated these, perhaps by means of escaping subterranean gases, has been proposed. The veins, however, seem to follow no particular pattern. Sometimes they are many inches thick, yet diminish to disappear when traced across the face of a cut.

At times they are so common that they render the quality of the product so poor that it has to be stored on a temporary dump awaiting such a time that processing would become profitable.[10] These hard bands, of course, were useless for the filtration, adhesive, bulkage, abrasion and other products which are the ultimate destiny commercially for these diatom skeletons. So also are the fish fossils when too many of them are embedded in the diatomite.[11]

Materials from the three quarries which I have visited are marketed in an astounding number of forms from floor sweepings to filters to fine silver polishes. A vast proportion of this remarkable industry stems from the purchase of a five cent sack of common table salt on September 27,

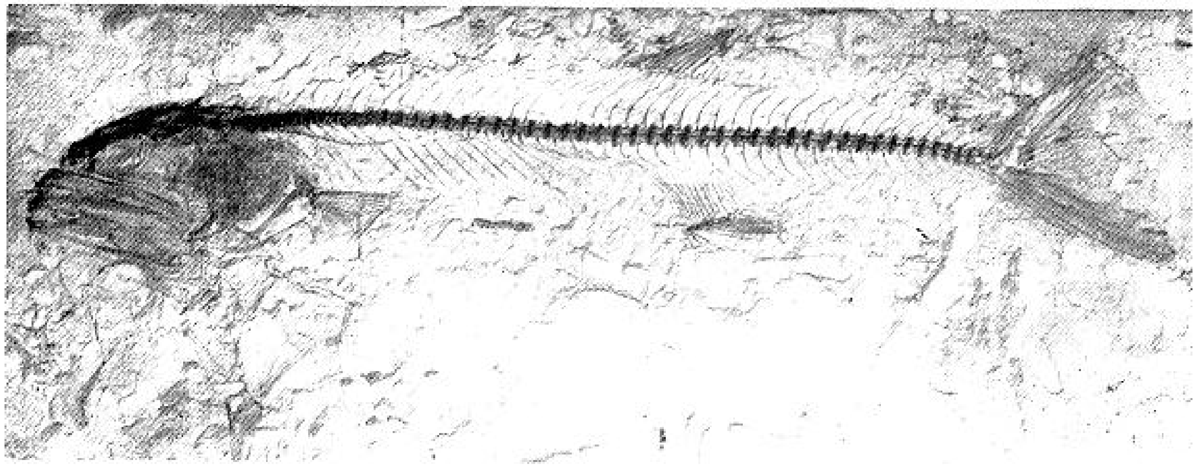

Figure 4. ***Xyne Grex*** **fossil. (Courtesy of Karl Dern.)**

1922 by a laboratory employee of the Celite Company (purchased in 1928 by Johns Manville Company). I have a dated copy of my friend's handwritten laboratory report on the experiment which first transformed diatomite (silica) into sodium silicate, or "Hy-Flow," as it is called in the industry today because of its new filter flow characteristics. This transformed the industry.

But it was not in the economic history or its values that I was interested particularly. Contained within these marine contoured rolling hills of diatomite are beautifully preserved biological forms so perfect that individual scales, bones, fins, even veins, upon occasion, may be studied. This is possible by the fineness of the particles of diatomite in which they were buried. Perhaps the very nature of the diatomaceous material contributed to the preservation of the soft parts and controlled decay.

These fish fossils are not mere carbonaceous impressions. In a number of specimens which the author opened, intestinal materials were still preserved as fine red dust which lay loosely in the body cavity. Often the delicate form of an eye was completely observable.

Frequently every scale was in place, and the only distortion visible was that of dislocation in the spinal chord and the pressing of the delicate rib bones and the lower fins out of alignment as the body was compressed to a few thousandths of an inch in thickness. In one case, a slight fault had displaced the head of a herring in two planes by one half of an inch. The distortion otherwise leaves the physical form well preserved in every way.

As a rule these fish were found lying in the bedding plane of the diatomite, which fractures easily along this plane. This made recovery of the fish fossils a fairly simple matter, except for the fact that diatomite is somewhat to exceedingly brittle, particularly after weather exposure. As a result, many of the blocks on which I worked were beginning to crumble on the surface, and did not fracture as well as those in other areas.

Mr. Bob Hendy, the geologist at the Johns Manville's "Celite" quarries, kindly escorted me in a four wheel company vehicle throughout their extensive quarries. He remarked that fossil fish finds have become rather uncommon, and that the company now somewhat regretted giving their very large collection of fish and bird fossils to Stanford University. A display at the gate and in an administration building is rather small, but it does include a fossilized bird and some ear bones of whales, along with herring. A superb example of mackerel is on display in the Lompoc Chamber of Commerce offices.

Normal Deposition Questioned

It is deposition of fossils in the normal bedding plane of the diatomite that first suggested that these fishes and birds had simply fallen to the bottom after death, to be slowly covered by the slow "rain" or "snow" of diatom structures from the waters above. There are several factors, however, that make this simple uniformitarian explanation impossible.

First, the perfect condition of the bodies of the fossilized fish repudiates slow deposition (Figure 4). Frequently the fish were recovered with every scale in place. The supposed gradual deposition of millions of carcasses, untouched by other bottom feeding fishes, and their painfully slow burial by the postulated 1/1500 to ½ inch per year deposition rate simply is not possible. The body structures of these fossils were preserved without any indication of deterioration and putrefaction. This proposed gravecloth of silica could scarcely cover a needle. How could it preserve the body of a fish an inch or more thick? Or how could a whale carcass be buried?

Secondly, there are fossils found which show that the rate of deposition was extremely rapid. Some are clearly deposited by a violent action which has torn scales and even removed fins from the body. In other fossils the scales lie in the diatomite layers around, **below** and in layers **above** the body. This requires exceedingly rapid burial! The typical fish, whether still alive or not at the time of deposit, was tumbled into position while surrounded by moving diatom ooze above and below. Its scales were torn loose by violent movement; they were deposited almost simultaneously with the fish.

Furthermore, there were places where fossils were found partially matted against each other, This made it impossible to recover either fossil whole, and they were unwisely discarded in many cases, for their specimen value was not recognized immediately. One workman, who spent some time with me in the office of Mr. Don Goodhue,[12] told me that he has found layers high on a ridge where thousands of fish fossils were heavily matted together in a layer more than a foot thick. These were so well preserved that they actually retained a distinct odor of fish when a fragment was broken off to expose unoxidized surfaces.

As a rockhound he was particularly interested in whalebone which is found occasionally. At least two specimens are known, one of which has been removed to the Santa Barbara museum. Presence of these large marine vertebrates is also significant evidence against slow burial. Long before uniform deposition could have buried them, their bones would have been scattered and then dissolved.

Very large quantities of whalebone have been found about 100 miles to the north, behind the first coast range, near Paso Robles, in the elevated valley followed by highway 101. One vertebra which I have noted from alluvium deposits there is more than 12 inches in circumference, and is quite well petrified. The bone structure is clear, and one pad is still observable on the end. A rancher friend there has a large horse trough filled with ribs and vertebra. Many other specimens have been carried away.

A Mechanism Proposed

It would appear that a violent upheaval had transformed the long Salinas Valley from an ideal breeding and calving ground for whales into a trap for such giant mammals. They now make their annual visits to remote Scammon's Lagoon in Baha California.[13]

When that uplift occurred in geological history I do not know, but I have observed that wave terraces and deltas are beautifully preserved along many sections of this unusual valley. Thus one may assume that they are Pleistocene, realizing that Pleistocene strata in the catastrophist's view is within historical times. An uplift that was sudden enough to trap whales in the Paso Robles area may have been involved in the Pleistocene uplift that left temporary beaches above Lompoc and lowered the sea level as much as 1,300 feet below very evident beach terraces in the area above Los Angeles.[14]

It is possible that a catastrophic intrusion of massive Arctic currents was an important factor in transporting the diatom ooze to Lompoc. If, as the author believes, the Miocene and the Pleistocene epochs are nearly contemporary steps in an extremely brief and violent crustal movement and upheaval in early historical times, then it may be that the diatom beds are, indeed, remains of arctic life forms swept down the coast by a moving coast line.

If one assumes that the so called "Cenozoic era" was actually a short catastrophic period, then it is possible also that a chain of events in rapid sequence swept Miocene diatoms ashore, trapped offshore life in "milk of Silica" (diatom ooze), and then soon killed the Paso Robles whales thereafter. The catastrophic nature of this uplift may be indicated by presence of fossilized sand dollars of remarkably modern form in water wells hundreds of feet deep in beds of sand.

Entombment of multitudes of shallow water fish with larger marine animals at Lompoc is in itself fascinating. That fossilized ear bones of whales are found in the same beds is significant evidence of catastrophism—that is, mixing of creatures such as shallow water fish (still alive) with remains of whales which had died previously. These whale ear bones would come from bottom deposits. They are portions of dismembered and decayed skeletons which are most resistive to dissolving processes which destroy bone in ocean depths. One may propose that these had been carried into place with the diatom ooze from the continental shelf at least. Their presence in beds containing undecayed, almost undistorted fossils of soft bodied fishes and birds which could never sink to deep water deposits without being torn apart and dissolved is most significant evidence for catastrophe. This combination of the two extremes could only speak of abrupt, violent burial.

A further indication of extreme violence is the fact that among the *Xyne Grex* specimens there are many indications that these fish were trapped in terror while they were yet alive. These herring, now apparently extinct, exhibit their terror by their mouths, often wide open as if gasping for their last breath in suffocation. Their fins lie widely spread and their backs are fiercely arched at the gill case and the body is twisted as if in agony. Indeed, this position of the head, thrown back as if the neck were broken, is characteristic of the Brush Ridge specimens and is found in many of them. Sizes of specimens at this site varied from an inch long minnow of unknown species to small "sunperch" and herring of a size comparable to those living today.

It is obvious from a careful examination that these fish were suddenly and violently trapped. They apparently suffocated in a strange, misplaced medium which unexpectedly overcame them, engulfing them in a solution that was at least as dense as milk of magnesia. Very possibly this was diatom ooze, disturbed from a large ocean basin, which had been literally scooped from its resting place—possibly from the continental shelf, possibly in some now forgotten arctic basin. If what the geologist calls Cenozoic was, as I believe, characterized by rapid continental movement to the west, it is likely that basin-scouring tsunsami waves would form and sweep on to the rising coast.

If the Cenozoic era was a fearsomely rapid and abrupt series of events, as postulated presently, then the Mesozoic "era" was already in the throes of the oncoming final ice age, the Pleistocene epoch. This may account for the vast deposits of diatoms, which thrive in arctic seas. Perhaps a comet or meteor struck the earth after the flood causing the land mass to divide. Collision fallout from this event may have changed the albedo of the earth and the "ice age" may have followed soon after, scouring the newly lifted Alps, Rockies, and of interest here, the Coast Range.

But in accounting for the remarkable quantities of diatoms, one should not forget that there is evidence that polar regions of an ancient continent were possibly still covered by a vast ice sheet left previously ("Paleozoic era") by the Noahic flood. Absence of Paleozoic deposits in the Canadian Shield might be used to support this contention. Such an icy condition after the flood would contribute ideal conditions for the phenomenally abundant multiplications of the diatoms in the seas of the world. In any case, it seems clear that there were vast quantities of diatom ooze available at the time of this catastrophic deposit. Ocean pockets of ooze were suddenly redeposited near or on shore as the result of violent crustal movement. No uniformitarian explanation can account for all factors involved at the moment of death and burial of fossil fish.

(It should be noted that George M. Price presented similar data regarding the diatomaceous beds, and he too regarded them as evidence for catastrophism.[15])

Perhaps the most remarkable feature contradicting uniformitarian deposition is occurrence of many fossil skeletons that simply do not follow the bedding plane in the diatomite. The bedding plane evidently represents a temporary surface. Not all fish lie flat, as would be expected if they were slowly and uniformly covered. Of course a fish which was deposited slowly, standing on end, would decay long before it could possibly be covered by the diatom "snow." Such a fossil, commonly found at Brush Ridge, had to be covered instantly.

Repeatedly I was disappointed in my search for "perfect" specimens which would exhibit the entire fish laterally on the bedding plane. Rather I found instead that only part of the fish lay in the bedding plane which had split open so easily. In my eagerness to find a nice display piece, I discarded numerous fossils which crossed bedding planes, as would be expected according to my contention that these had been catastrophically deposited. "They have their heads and tails a million years apart," commented a puzzled plant workman, who helpfully spent some time with me when I was first orienting myself to the area and the situation. He, like myself, was unable to reconcile field fact with classroom theory.

Conclusions

In the light of all of these factors it is presently concluded that the diatom deposits were formed by material forced on shore by westward movement of the continental shelf with accompanying compressions and faults which elevated these ranges which traverse Point Arguello. They were deposited conceivably in unconsolidated ooze form on the Pacific Ocean bottom after the Noahic flood. Their delicate bodies may have been among final sediments which precipitated out of the quieting flood waters. Or, as I have suggested, their affinity for cold waters may have brought a tremendous spurt of reproduction after the flood when combined factors of icy waters and silica filled waters made this possible.

It is true that the diatom has not been identified in deposits older than the Jurassic period of the Mesozoic era, but this is simply the old argument from silence. If these are extremely abrupt periods, as proposed, following close after the creative week, there is no problem. The disturbance of the diatoms into solution (out of ocean basin deposit) and their transport through the fish-filled waters of the continental shelf I attribute to an abrupt movement of the continent following the very extensive separation of the continents.

This event, which I identify with Genesis 10:25, would involve abrupt overriding of the East Pacific Rise by the continental shelf. This would literally scoop up these deposits and hurl them into the coastal waters. Their compression and uplift would be completed in the final stages of the Pleistocene Epoch about 2,000 B.C.

(Editor's note: Some will interpret Genesis 10:25 (as Matthew Henry does) to refer to a division of nations politically (in keeping with Genesis 10:32 even though a different verb for "division" is used) rather than to a physical partitioning of an early continent into several fragmentary continents. Furthermore, some creationist workers envision only one great earth catastrophe since creation–the Noachian deluge. Perhaps such readers will be interested to suggest a mechanism for tying all this excellent evidence, which Dr. Northrup presents regarding fossils in diatomaceous beds, into one related event.)

This view of the formation of the Lompoc diatomite deposits finds agreement in an isolated comment on deposits of microflora ooze found in Von Engeln and Caster:

> The peculiar significance of the deep sea deposits is that they do not appear, except under very special circumstances as constituents of this thick series of sedimentary marine strata that constitute the bedrock over most of the land areas of the earth. They are never lifted to make continental tracts. Where found, *extreme local diastrophism is responsible.*[17]

It is presently postulated that this compression series which affected Point Arguello in this way was at the same time completing the entire coastal range, trapping vast basins behind San Francisco's Golden Gate Ridge and the small range now cut by Carquinez Straits which drains the Great Central Valley of California.

Presence of fossil sand dunes high above the San Francisco Bay in the new Sierra Monte development south of the city is one of many evidences used to support this. These recent channels now drain the entire basin from Redding to the Grapevine south of Bakersfield. The shoreline of this enormous lake is plainly visible along the new Freeway 5 miles south of Tracy, where delta fans are evident below erosion valleys high above the valley floor.

It is significant that diatomite of low grade may be found scattered from King City far north of Lompoc to well south of Los Angeles, as well as in the Great Valley west of Bakersfield.[18] Here the presence of many fossil shark's teeth in "Sharkstooth Hill" bears mute testimony to the dramatic changes in the western continental shelf in those tumultuous times. Today a large folded range stands between Bakersfield and the coast.

It is the author's opinion that California is a fertile area for a Christian geologist studying the weaknesses of uniformitarian theory. The diatom itself bears mute testimony to this weakness. Furthermore, the Christian biologist should find the reproductive traits of the diatom significant. The fact that over 25,000 varieties of the diatom have been classified, and that fossil and modern forms are identical, though supposedly separated by millions of years and countless reproductive divisions,[19] should provide a check on the postulates of biological change. The stability of these 25,000 created varieties of this microscopic plant which flourishes invisibly to the human eye is an exquisite testimony to their infinite Creator.

References

[1] An example copied from the Lompoc Chamber of Commerce map follows: ". . . Diatomaceous earth–a soft powdery substance created from the fossilized remains of microscopic plants which grow beneath the water and built up layer after layer of 'sea snow' for thousands of years."

[2] Bob Hendry, Geologist at the Lompoc Johns Manville plant, in private discussion, August, 1968.

[3] "After 50,000 centuries research puts the diatom to work." A booklet published in 1941, from the series, "Research at Johns Manville," pp. 7-8.

[4] Von Engeln and Caster. 1952. Geology. McGraw and Hill, New York. "It will be appreciated that, although formanifera, Pteropods, Radiolarian and diatom remains fairly rain down through the oceanic deeps, their accumulation over the ocean floor in the sense of thickness of deposit, is at an extremely low rate because of microscopic size of the organisms and because some of the remains dissolve as they sink." (pp. 324).

[5] Meguro, Ito, and Fukushima. 1966. "Diatoms and the ecological conditions of their growth in sea ice in the arctic ocean ." *Science,* 152:1089-1090.

[6] Lane, Ferdinand C. 1947. The mysterious sea. Doubleday and Co., New York, p. 87.

[7] *Ibid.*

[8] The Dialogues of Plato, The republic. Book 7, Great Books of the Western World, Encyclopedia Britannica, Chicago. Vol. 7:388-389.

[9] Northrup, Bernard E. 1968. Harmonizing geology with Genesis. The author has available a four page chart and the explanative sheets displaying his conclusions concerning precise relationships of Historical Geology and Biblical accounts of creation and catastrophes ($1.00.)

[10] According to Bob Hendy, Geologist at Lompoc Johns Manville Plant.

[11] Superintendent Don Goodhue and interested employees of Grefco's Dicalite plant during an extended conversation, August, 1968.

[12] *Ibid.*

[13] Gardiner, Earl Stanley. 1960. Hunting the desert whale. Morrow, New York.

[14] Moore, Raymond C. 1958. Historical geology. Second Edition, McGraw Hill and Co., New York, pp. 474-477.

[15] Price, George M. 1923. The new geology. Pacific Press Publishing Association, Mountain View Calif., pp. 200-201.

[16] Matthews, William H. 1968. Fossils. Barnes and Noble, p. 1990.

[17] Von Engeln and Caster. *Op. cit.*

[18] Moore, *Op. cit.*

[19] Reference #3 above.