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Thomas R. Hargrove and Isagani Medina

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## Sunken Ruins in Lake Taal: An Investigation of a Legend

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ISAGANI MEDINA

Taal Volcano is aptly called a "killer volcano." She is as deadly as she is mysterious and beautiful. Taal, in a deep crater lake about sixty kilometers south of Manila, has erupted at least thirty-three times since 1572.<sup>1</sup> A 1911 eruption killed more than 1,300 lakeside dwellers and a 1968 eruption, several hundred.<sup>2</sup>

The most colorful of many Lake Taal legends is of a sunken Spanish church. I first heard the story in 1979 over coffee with Urbito T. Ongleo, photography supervisor at the International Rice Research Institute (IRRI). In the late 1960s, Ongleo was searching for treasure that Japanese forces allegedly hid on Mt. Macalot in World War II. He spent a night in Lumang Lipa (Figure 1), a remote lakeshore barrio near Mt. Macalot's base. Local fishermen told Ongleo a legend, passed down orally for two centuries, of a Spanish-era church and town that sank into the lake near their barrio during a volcanic eruption "long ago." I didn't believe the Lake Taal legend, but I was intrigued and wanted to make a freshwater dive. The "sunken Spanish church" was our dive objective one Sunday morning in February 1980.

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1. Arturo Alcaraz, "A Land of Volcanos," *Filipino Heritage: The Making of a Nation* (Manila: Lahing Pilipino Pub. Inc., 1977, vol. 1, pp. 16-25.

2. On 27 March 1986 three divers, including the author, dived into Crater Lake on Volcano Island, the source of the 1754, 1911, and other eruptions described in this paper. Analysis of water samples taken at 28 meters, 3 meters, and the surface showed about 3 percent sulphur and a pH of 2.7. We had dived into dilute sulphuric acid, but had no effects.

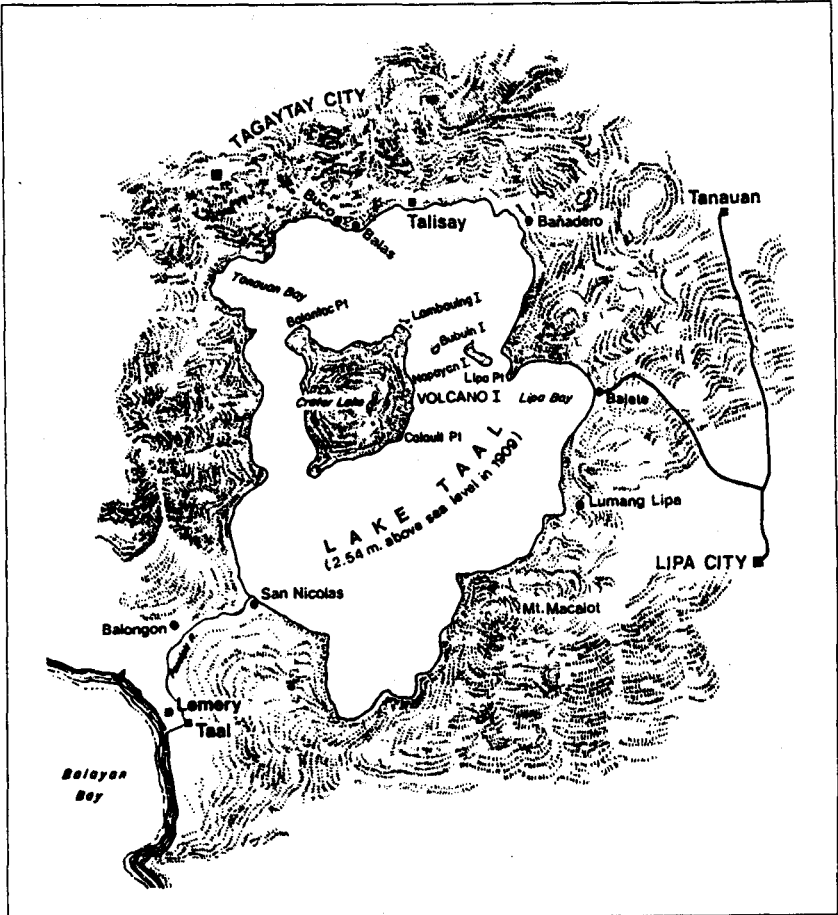


Fig. I. Lake Taal today. Note that the lake was 2.54m above sea level in 1909; we have found no reference to its elevation today. The Pansipit River flows from San Nicolas in the southwest to present-day Taal. The ruins of the original Taal Cathedral are on the shore near San Nicolas. Also note Lipa Bay, Lipa Point, and Tanauan Bay.

Fishermen of Lumang Lipa all knew about the “sunken church” and pointed out where their ancestors said it was. But each pointed out in a slightly different direction. We entered the green, murky water with apprehension, and swam through tall reeds and moss. The aquatic growth ceased at about six-meter depth and visibility increased to two meters. We were unnerved by close encounters with evil-looking, black-and-white banded snakes.

We found no church, but Ranjiv Khush, son of an IRRI scientist (and then in high school), found a broken clay pot at twenty meters depth. The archaeological section of the Philippine National Museum dated the pot as fifteenth or sixteenth century (pre-Spanish era). It is covered with two centimeters of crust. At IRRI, we chipped off and dropped pieces of the crust into hydrochloric acid; the resulting bubbles and vapor indicated calcium carbonate. Microscopic examination of a slide made from the crust showed skeletal remains. The crust seems to be of coral, but that would mean the pot had lain in ocean waters for years. Taal's waters are fresh.

We returned to Lumang Lipa a week later and met fishermen who urged us to investigate *sapao*, a Tagalog word they say means "built-up structures under the water" (and which would become a key in the Lake Taal mystery). We had no scuba gear that day so we dived the *sapao*, about 0.5 kilometer north of our first dive and 100 meters from the lake shore, with fins and snorkel. The water was the clearest I have seen in Lake Taal. We could see the *sapao*, at eight to nine meters depth, from the banca.

Parallel rows of wall-like structures, one to two meters high, rose from the lake bottom. The "walls" appeared constructed of stones, twenty to twenty-five centimeters in diameter. Some walls were vertical and straight, others were crumbled. The tops of some walls were flat, extended about three meters, then dropped off again. Others rose from the deeper side of the lake, then disappeared into the lake bottom. Some corners of the walls were almost square. Individual stones were covered with a crust, biological in origin but not like the crust on the pot. The wall looked man-made.

Next, we learned of the destruction of four Lake Taal towns—Taal, Lipa, Tanauan, and Sala—during a 1754 volcanic eruption, and found a copy of the Murillo Velarde map of 1734 (Figure 2), generally acknowledged as the first detailed map of the Philippines, and other early maps that show the original Lipa near where we dived the *sapao*. The maps also show a clear channel connecting Lake Taal to the South China Sea. Through Spanish records and historians' accounts, we pieced together a dramatic story of Augustinian priests establishing the missions of Taal, Tanauan, Lipa, and Sala on the shores of a great saltwater lake from 1572 to the early 1600s, the 1754 eruption, the terror of Lake Taal dwellers as they fled their submerging towns and their resettlement in safer places. We became addicted to an amateur search for Lake Taal's almost-forgotten history.



and find Manila. They landed at Balayan Bay in today's Batangas Province.<sup>4</sup> There, Salcedo set off inland to investigate a thickly populated area with "much cultivated land."<sup>5</sup>

Moros from Balayan guided Salcedo up "a narrow arm of the sea" into Lake Bombon (now Lake Taal) in *praus*, or oared boats, searching for "a fortified place . . . situated on both sides of the water, and . . . very high and rugged and suitable for laying ambuscades." His information proved correct for "suddenly, and without them being able to see anyone, many arrows came flying through the air, one of which wounded . . . Salcedo in the leg." Salcedo and his men retreated, then disembarked and fought the Lake Taal Moros on land. Spanish bullets felled more than forty Moros at the gate of "a town."

The Spaniards entered the town "near the mouth of the Bombon River" and were met by a horrible sight: the corpses of several Chinese traders "who had been skinned alive and exposed to the sun . . . blood was still upon their flayed faces." The Chinese had sailed up the channel in two junks for their annual trading voyage. They got into a squabble during the bargaining and the Chinese killed a Moro chief. The Chinese merchants then "tried to put out to sea, but in their haste they ran aground at the entrance to the harbor." The Spaniards freed two of the Chinese who were awaiting their turn to die.<sup>6</sup> But Salcedo's leg wound prevented him from fighting in the conquest of Manila a few days later.

Sometime in the 1500s, Moro pirates had destroyed the first town of Taal, near today's Balangon (Figure 1). In 1572, Augustinians under the leadership of Fr. Martin de Rada established the mission of Taal on the southern shore of "a great lake of salt water [author's emphasis] called Bombon."<sup>7</sup> Fr. Gaspar de San Agustin, in 1698, described "a volcano of fire, which is wont to spit forth many and very large rocks, which are glowing and destroy the crops of the natives."<sup>8</sup>

4. C. Quirino, "Juan de Salcedo: The Last Conquistador," in *Filipino Heritage*, vol. 4, pp. 897-900; Martin J. Noone, S.S.C., *General History of the Philippines* (Manila: Historical Conservation Society XLIII, 1986; original published by Richview Browne & Nolan Ltd., Ireland, n.d.), part 1, vol. 1: *The Discovery and Conquest of the Philippines (1521-1581)*; and personal communication with Pedro Picomell.

5. Noone, *The Discovery and Conquest of the Philippines*.

6. Miguel Bernad, S.J., *The Christianization of the Philippines* (Manila: Filipiniana Book Guild, 1972).

7. Emma H. Blair and James A. Robertson, *The Philippine Islands*, 55 vols. (Cleveland: Arthur H. Clarke & Co., 1903-09; reprint ed. Mandaluyong, Metro Manila: Cache Hermanos, Inc., 1973). On the "Bombon," Manuel Sastron, *Batangas y su Provincia* (Malabon: Asilo de Huercanos, 1895).

8. Dean Worcester, "Taal Volcano and its Recent Destructive Eruption," *National Geographic* 6 (April 1912).

Martinez de Zuñiga recorded in 1593 that “different kinds of tuna fishes are caught here, but not as good as those of Spain.”<sup>9</sup> Medina wrote in the 1630s that Taal’s waters were salty.<sup>10</sup> Two hundred years later Hill disputed this, although he felt the lake may have been brackish.<sup>11</sup>

During a 1572 eruption, Fr. Agustin de Albuquerque held Mass on Volcano Island “to tranquil the spirits of the panic-stricken natives.”<sup>12</sup> Other exorcisms were celebrated during the 1590 eruptions. In 1611, 400 natives erected “an immense cross of hardwood . . . at the brink of the principal crater” to exorcise the deadly volcano under the guidance of Fr. Tomas de Abreu. The Taal parish priest reported that “afterward, the volcano [not only] ceased to do harm, but the island has regained its fertile condition.”<sup>13</sup>

Taal prospered as a trade center, despite the active volcano. Among its stone buildings were the area’s dominant church and convent, government houses, warehouses, a rope factory, and a prison. In 1732 Taal, the local center of farming, weaving, oil making, and fishing, became capital of the newly established Taal Province.

Meanwhile, in 1584, Augustinians had built the missions of Tanauan and Sala on the lake’s northern shore (Figure 3). In 1603 Fr. Juan de Medina wrote “As one goes [to Tanauan] from Manila, he descends a truly frightful hill for more than one league. The convent lies on the lake shore, and on the brow of the same . . . slope.”<sup>14</sup>

In the early 1600s, Fr. Hernando Cabrera allegedly built an Augustinian church and convent—called San Sebastian for its patron saint—at Tagbakin, an existing village on Lake Taal’s eastern shore. The image of St. Sebastian later disappeared from the convent and was found by a lipa tree to the north. The villagers thought that the saint wanted to live there so they moved their settlement and church and renamed the town Lipa (Figure 3).<sup>15</sup>

9. Joaquin Martinez de Zuñiga, *Estadismo de las islas Filipinas* [Status of the Philippines in 1800], 2 vols., trans. Vicente del Carmen (Madrid: Vda. de M. Minuesa de los Rios, 1893; reprint ed., Manila: Filipiniana Book Guild, 1973).

10. Juan de Medina, *Historia de los sucesos de la orden de n. gran P.S. Agustin de Filipinas* (Manila, 1892).

11. Hill, “Taal and Its History.”

12. Worcester, “Taal Volcano.”

13. John Foreman, *The Philippine Islands* (New York: Charles Scribner’s Sons, 1906); Miguel Sadorra Maso, S.J., “The Eruption of Taal Volcano: January 30, 1911,” Weather Bureau, Dept. of Interior, Manila, 1911.

14. Foreman, *The Philippine Islands* (1899).

15. “Lipa: History and Cultural Life of the City,” Filipiniana Section, Philippine National Library. Unpublished. Ca. 1951.

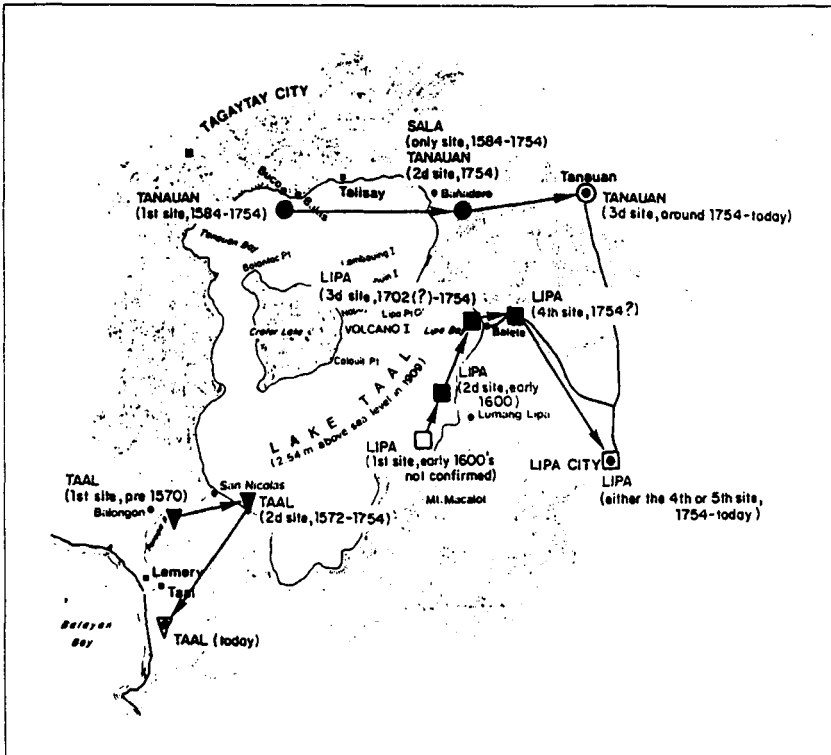


Fig. 3. Past and present sites of Taal, Tanauan, Sala, and Lipa. Sala no longer exists as a town, but is a barrijo of today's Tanauan. The 4 towns may have had as many as 12 sites. We think that 4 of these sites lie submerged about 10m deep today.

Taal Volcano erupted in 1634, 1635, 1696, 1698, 1705, 1707, 1731, and 1749. Fr. Francisco Pingarron, a Lake Taal missionary from 1663 to 1735, recorded that four days of eruption near Lipa in 1716 "produced big waves which lashed against the shore with the force of a hurricane [and] also lashed at the convent and swept away some sixty feet of soil from the coast, giving rise to fear that the edifice, made with lime and stone, might be swept away."<sup>16</sup> Fr. Manuel de Arce wrote that the eruption "killed all the fishes, large and small, the waves casting them ashore in a state as if they had been cooked."<sup>17</sup>

A strong light was observed at the top of Volcano Island the night of 11 August 1749 by Fr. Francisco Bencuchillo, Sala parish priest from

16. Martinez de Zuñiga, *Estadismo de las islas Filipinas*.

17. Worcester, "Taal Volcano."

1710 to 1776. Increasing thunder woke him at 3:00 a.m. The priest assumed it was artillery fire from the Acapulco galleon, expected in Manila from Mexico. (Galleons often fired a salute to Our Lady of Caysasay while passing the Caysasay sanctuary at today's Taal, by the South China Sea.) But the Augustinian priest counted many more shots than those of a royal salute. He feared a naval battle off the coast. At dawn, Fr. Bencuchillo watched the volcano gush an immense smoke column. The priest ignored the natives' plea "Father! Let us flee!" and watched "pillars of sand" ascend from the water near Sala's shore and remain erect. A second earthquake submerged the pillars, along with trees from nearby islets.

After three weeks of eruption, Fr. Bencuchillo wrote that

the lands of Sala and Tanauan shifted. Streams found new beds and took other courses, whilst in several places trees were engulfed in the fissures made in the soil. Houses which one used to go up into, one now had to go down into, but the natives continued to inhabit them without the least concern . . . The entire territory of Sala and part of . . . Tanauan have been rendered practically uninhabitable. Eruptions continued until 1753.<sup>18</sup>

The eruption that finally destroyed the Lake Taal towns began on 15 May 1754 and continued for almost seven months. Taal then had 1,300 *tributos* (taxpayers), so its total population must have been from 7,000 to 8,000. Lipa had about 3,000 residents and Tanauan, 1,500. The volcano constantly belched fire and smoke columns and spewed such quantities of lava "that only the waters of the lake saved the people on shore from being burnt," wrote Fr. Bencuchillo. [Apparently, Fr. Bencuchillo was, by then, the Taal priest.] On 10 July a heavy shower of "mud as black as ink" swamped Balili, a barrio of Sala. On 25 September the volcano threw stones that collapsed the roofs of homes in Taal.<sup>19</sup>

Taal's remaining population finally abandoned the town and escaped south to Caysasay on 28 November "fleeing from this living picture of Sodom, with incessant fear lest the raging waters of the lake overtake us, which were . . . invading the main part of the town, sweeping away everything which they encountered," according to Fr. Bencuchillo.<sup>20</sup>

18. *Ibid.* and Anonymous (possibly Fr. Manuel Zamora), "An Exact Description of Taal Volcano and its Eruption of 1754." Trans. from Spanish, unpublished manuscript in Ramo de Filipinas, vol. 4, Archivo General de la Nacion, Mexico City, 1755.

19. Dean C. Worcester, *The Philippine Islands and Their People* (New York: The Macmillan Co., 1899).

20. Worcester, "Taal Volcano."

Dense smoke, lightning, and explosions made the refugees fear "the end of the world was arriving." The next day was quiet, but then came two days of "hurricane." The Governor of Taal order a ship of food and clothing, but it broke up on Balayan shoals.<sup>21</sup>

After the tragedy, Fr. Bencuchillo

resolved to visit my town of Taal; nothing was left . . . except the walls of the church and convent . . . the government house . . . rope factory, the warehouses, everything was buried beneath a layer of stones, mud, and ashes. . . . I went down to the river and found it completely filled, with boats . . . buried in the mud. After incredible efforts I finally succeeded in unearthing, in what had once been the church and sacristy, the chests which contained the sacred vestments and vessels. . . . Nearly all . . . were demolished . . . and filled with foul-smelling mud that had ruined or disfigured their contents. The worst . . . is that the mouth of the River Pansipit having been blocked, *the lake is rising and invading the towns of Lipa and Tanauan, both being on the lowest level, and inundating their buildings* [author's emphasis].<sup>22</sup>

In late 1987, we finally managed to get a copy of a 1755 report on the 1754 eruption, probably written by Fr. Manuel Zamora, Lipa parish priest, from the National Archives, Mexico City. The priest recorded that by 1755 "the water of the lake had risen so much that two streets of Lipa were submerged, and the water reached the *patios* of the churches in Tanauan and Sala." When the water receded, so much salt was left that no one could drink or fish the waters of the rivers. The eruption and earthquakes ceased on 12 December 1754.<sup>23</sup>

Fr. Bencuchillo wrote that the 1754 eruption made residents of Lipa, Tanauan, Taal, and Sala abandon their towns and relocate in safer places. Taal citizens reestablished their town at Caysasay, its third (and present) site. In 1758, Taal residents began to build a new Taal cathedral.<sup>24</sup> Only 900 residents remained in the ruins of Taal, today called Barrio San Nicolas.<sup>25</sup> Half of Taal Province's survivors fell victim to "a malignant fever; the smell of sulphur and fire remained for six months after the 1754 eruption."<sup>26</sup> The short-lived Taal Provincce was gone, and Batangas became the capital city of the new Batangas Province.

21. Pedro Andres de Castro y Amado [also spelled Amocedo], "Historia de la Provincia de Batangas," ms. in the Buan Convent, Batangas, 1790.

22. Worcester, "Taal Volcano."

23. Anon., "Eruption of 1754."

24. Personal communication with Dr. Isagani Medina.

25. Hill, "Taal and its History."

26. Castro y Amado, "Historia de la Provincia de Batangas."

## THE LAKE TAAL TOWNS: 1754 TO PRESENT

The four Lake Taal towns—Taal, Lipa, Tanauan, and Sala—may have had as many as twelve sites. We think that four of the sites now lie ten meters beneath Taal's waters. Incredibly, "the wandering city of Lipa" seems to have had four locations before its present site (Figure 3).

The unpublished Lipa history says that natives rebuilt the original San Sebastian church as Lipa (near today's Lumang Lipa) in the 1600s. But in 1702, most Lipa residents abandoned the town's second site and moved north to Balete. Some walls of a destroyed stone church still stand at Balete, adjacent to today's church. But these *cannot* be ruins of the Lipa that was submerged in 1754 because the Balete ruins are on the side of the caldera slope, at least fifty meters above today's water level.

In 1983 I heard a legend of still another "sunken church" in Lipa Bay, and of a cemetery excavated along its shore. Sastron published a map of Batangas Province that shows "Ruinas de Lipa" north of Balete on the southern shore of Lipa Bay.<sup>27</sup> The ruins also appear on maps published by the U.S. Coast and Geodetic Survey (1900), Hodgson (1908), and, most precisely, by Fr. Miguel Saderra Maso (1911).<sup>28</sup>

The "anonymous" 1755 account is accompanied by a map of the 1754 eruption. Obviously, its cartography is not precise but the map shows Lipa (marked by a church with cross) east of a peninsula which *must* be Lipa Point, the only prominent peninsula in that portion of the lake. The island off the peninsula is surely Napayam. That, along with the names "Lipa Bay" and "Lipa Point," are good evidence that Sastron's 1895 map and others show the location of the Lipa that was submerged in 1754.

Lipa residents must have moved north to build a third Lipa along what is now Lipa Bay in 1702. But the new town was submerged in 1754. Is it possible that part of the population built a fourth church along the Caldera slope at today's Balete? And that Lipa was also destroyed? The Batangas Directory (1936), states that another Lipa church was built in 1757 at Lipa's present site.<sup>29</sup> But a plaque outside today's Lipa Cathedral states that it was built from 1865 to 1894.

27. Sastron, *Batangas y su Provincia*.

28. U.S. Coast and Geodetic Survey, *Atlas of the Philippine Islands*, Spec. Publ. No. 3 (Washington, D.C.: Government Printing Office, 1900); Gaspar Hodgson, *Map of the Philippine Islands* (New York: World Book, 1908); and Miguel Saderra Maso, "The Eruption of Taal Volcano."

29. *Batangas Directory* (Manila: Nueva Era, 1936).

Tanauan's post-1754 locations are also difficult to trace. In 1984, I met with Batangas Governor Jose Laurel, whose Tanauan roots go back centuries. The Governor says that Tanauan was previously on the Lake Taal's northeastern shore. I had already found ruins there, which residents claimed were walls of the original church of "Lumang [old] Tanauan." But all pre-1754 maps show the old Sala was at that site.

All parties were correct, I later learned. Buzeta and Bravo wrote that Tanauan residents moved to Sala in 1754 and changed the town's name.<sup>30</sup> Fr. Martinez de Zuñiga (1893) visited Tanauan (at today's site) around 1800 and wrote:

The church is too small, considering . . . that a big amount was spent in constructing it as a result of the lack of agreement among its prominent citizens since its transfer in . . . 1754. . . . The people of these towns [Sala and Tanauan], now that they are fused, added more fuel to their old rivalry . . . each group strived to have its own inhabitants. The town of Sala specially felt that the new town should be named after it and not after Tanauan. . . . *The natives could not refuse the move to combine their towns as ordered* [author's emphasis], they feigned delays to avoid helping in the construction of the convent and the church.

Fr. de Zuñiga added that the Sala-Tanauan rivalry was declining and would someday be forgotten; ". . . then perhaps they will be able to build a church commensurate to its population."<sup>31</sup>

Today, Sala is the southwestern barrio of Tanauan. The old antagonism is forgotten and Tanauan Cathedral is, indeed, beautiful.

Taal's most gruesome eruption in modern times was in 1911 when she set a "world's record for seismic activity."<sup>32</sup> The U.S. Army Burial Corps and Red Cross compiled statistics. In most catastrophes, about 10 are injured to 1 killed, but in 1911 Taal reversed the proportions: 1,335 persons were killed and only 199 injured, many of whom died later.<sup>33</sup>

But the history of the original Lake Taal settlements is now almost forgotten.

30. A 1755 map of damage to Lake Taal's towns is in Mexico City. It is entitled "Año 1755: Descripción ajustada y exacta Del Bolcan de Taal y su Furiosa Erupcion el Año del mill setez cinco y quatro" St. AGN (National Archives, Mexico City) Ramo de Filipinas, tomo 4, exp. No. 1, FF. 1-12; see also Manuel Buzeta and Felipe Bravo, *Diccionario geografico, estadístico, histórico de las Islas Filipinas* (Madrid: J.C. de la Pena, 1850-51), vol. 2.

31. Worcester, "Taal Volcano."

32. F.H. Noble, *Taal Volcano: Album of Views of 1911 Eruption*, Manila, 1911.

33. Worcester, "Taal Volcano."

## THE EVIDENCE: THE SAPAO

The four towns were undoubtedly on Lake Taal's shore, and were destroyed by Taal Volcano's 1754 eruption. We have cautiously not claimed that "the walls" (sapao) we have found are man-made, but the following evidence makes us believe that we are diving on ruins associated with the original Lipa and Tanauan.

We first found sapao (described earlier) near Lumang Lipa. Then we found records and pre-1754 maps that made us believe the sapao might be ruins of the original Lipa before we learned of Lumang Lipa's name: *luma* means "old" in Tagalog.

The sapao we have dived at Lumang Lipa lies fifty to sixty meters west of a rocky point about 200 meters north of the present barrio. At least three "groups" of sapao rise one to two meters from a flat lake bottom of volcanic gravel mixed with small shells (mostly cones, one to four centimeters long). The sapao are rectangular, with "corridors" facing west.

Rock formations along the shore at Tangkaban are heavily carved. The rocks are about one meter above the water in the dry season, and submerged during the monsoons. A perfectly round hole about twenty-two centimeters in diameter is carved into one sloping stone. It connects to another horizontal carving directly below. We have chiselled into the sapao at Tangkaban, and found what seems to be coral beneath the outer crust. We concluded that the sapao were ancient coral beds. But we changed our minds after visiting the ruins of the original Taal cathedral (local residents call it *Lumang Taal*) in Barrio San Nicolas, by the lakeshore near the Pansipit River's mouth. A highway runs through the old cathedral, but tropical growth hides its ruins from motorists. Much of the cathedral was built of coral blocks. Augustinians also built the Caysasay Church (in today's Taal) of coral blocks.

If the Taal and Caysasay churches had been submerged in 1754, and divers had chiselled into their walls 230 years later, they would have found coral. But local legends do not place a "sunken church" off Tangkaban. Instead, legends place a church in the bay south of Lumang Lipa where we found the coral-crust pot on our first Taal dive.

A local fisherman claims to have accompanied a Filipino scuba diver who, while hunting cels in 1987, discovered the roof of a building rising from the lake bottom in that bay. We dived there again in December 1987. First we discovered some strange carvings on a rock outcropping at the shore. A round, vertical structure was carved from the rock, about

one meter high. Bored in its center is a hole, twenty centimeters in diameter. Beneath the bowl-like carving another hole, about ten centimeters in diameter, was bored horizontally, about thirty centimeters. The two holes do not connect. A few meters from "the bowl" are steps carved into the stone, and round bored holes, about ten centimeters in diameter, extending into the water. Many of the holes are aligned with the steps, which suggests they held posts to support an overhead structure, or a pulley to bring goods (or boats) from a landing. "The bowl" may have been the base of a larger post for a light? a cross? a lookout tower?

Meanwhile, the fisherman gave us precise directions to the "sunken church." We followed a compass azimuth at six to ten meters depth, along a bottom of mud and ash. Then we hit volcanic gravel and sand, again mixed with thousands of cone shells (which might indicate a former seashore), then the bottom dropped off at a forty-five degree angle. We descended into total blackness at twenty-eight meters and found nothing. Fishermen say the Lipa-area carvings are "very old," but have no idea of their purpose.

One explanation of carvings at Tangkaban and Lumang Lipa is boat moorings, but they do not secure boats today. Also, if the sapao, both north and south of Lumang Lipa, is man-made, the carvings would have been ten meters above the 1754 lakeshore and fifty to sixty meters inland before 1754.

The 1755 and other maps motivated us to dive in Lipa Bay in January 1988. A Balete fisherman had told us of a "Convento" there. It turned out to be a natural rock formation along the Lipa Bay shore, but the name implies that a convent may have once been nearby. Fishermen claim there is sapao about 100 meters into the lake, and an underwater formation that snags fish nets. We found nothing on our one dive.

The boatmen took us several hundred meters east and said we'd find sapao at about ten meters depth between there and the shore. The area seemed closer to where maps show the third Lipa. We shot a compass azimuth toward shore, and swam at ten meters until we hit the edge of a steep dropoff, again littered with shells, about 150-200 meters from shore. We found sapao at nine to ten meters depth at two locations. We abandoned our exploration when we were, apparently, attacked by two sea snakes.

Maps of the 1700s show Tanauan's first site on the northern shore (also confirmed by Buzeta and Bravo). Thus, we moved our search to Balas (Figures 1 and 3), a lakeshore village at the foot of steep Tagaytay Ridge and near "Tanauan Bay." Local fishermen volunteered to show us

more sapao and took us about two kilometers east to what we now call "the rock" (Figure 4). About 100 meters from the shore, its top is submerged one meter during the monsoon season, but about one meter of it is above water in the dry season. At least a dozen round holes, about twelve centimeters in diameter and seventeen centimeters deep, have been bored into the surface of "the rock," both below and above today's lowest water level. Other carvings are similar to those at Tangkaban Point.

A "wedge" with a flat bottom, about 0.7 meters deep and 2.5 meters long, is chiselled into the top of "the rock," facing southwest to the water between Volcano Island and the lake's shore (Figure 4). The wedge turns to a 1.5 meter cul-de-sac to the north. Was this an emplacement for a small cannon to guard Tanauan from ships that might invade around Volcano Island from the southwest?

Chiselled into a submerged portion of the rock is a rectangular and perpendicular slot (Figure 4) about 0.5 meters below the water in the dry, and 1.5 meters deep in the wet season. "The slot" is about seventy centimeters long, fifty centimeters wide, and fifty centimeters deep. Its sides and bottom are flat and its corners square. Man undoubtedly carved this underwater structure. A semicircle of sapao, about one meter high and at a depth of about three meters, faces Volcano Island about six meters south of "the rock" (Figure 4). Its length is about twenty meters.

In 1983 we dived the Tanauan site with Isabel ("Lilo") Picornell, an archaeologist-scuba diver who specializes in the Spanish-era Philippines. She speculates that "the rock" may have been the base of a watch tower, and that the circular holes drilled into its surface supported poles for an overhead platform. Picornell thinks that the semicircle of sapao might be the top of a fortified wall around the tower. Many sixteenth and seventeenth century churches had adjacent lookout towers to warn of the approach of Moro pirates, according to Ms. Maria Kalaw Katigbak, a local historian whose Lipa roots go back at least two centuries.<sup>34</sup> Picornell's theory is further supported by the translation of the Tagalog word *tanawan*. It means "lookout point." "The rock" must have dominated the terrain, rising ten meters from the ground, three centuries ago, the ideal place for a watch tower, which may have given Tanauan its name.

My own theory about "the slot," which faces the old cone on Volcano Island, due south is that, since Augustinian priests erected huge wooden

34. Personal communication with Ms. Maria Kalaw Katigbak.

crosses to exorcise Taal Volcano, the slot may have held the base of such a cross, to protect Tanauan from eruptions.<sup>35</sup>

We have found other sapao rising from the lake bottom to a height of two to three meters at nine meters depth, about seventy meters south-southeast. Both sides of the "walls" are vertical and made of stones, twenty to twenty-five centimeters in diameter. The top is flat (but of stones), and about three meters across. The sapao crumbles and disappears to both north and south.

In 1982 we found about fifteen meters of sapao, running east to west, perhaps one hundred meters south of "the rock." These walls were like those previously described, but were about five meters wide. A few meters south of the sapao, the lake bottom drops at a forty-five degree angle. Visibility ceased at twenty meters. We did not record an accurate compass azimuth, and cannot relocate these sapao.

In September 1986 my thirteen-year old son Miles and I found more crumbled sapao, about two meters high, at a depth of six to seven meters about fifty meters south-southeast of "the rock." Visibility was only one meter but we followed a "wall" to the west. We then turned north, then east, then south, and swam west into the clouds of volcanic ash we had stirred up earlier. In other words, we followed a circular pattern. Round holes, similar to those on "the rock," were bored into the top of the sapao.

We found other intriguing sapao about two kilometers west of "the rock" near Balas, where a map that Worcester published in 1912 shows Old Tanauan. A local legend says these sapao are ruins of pre-Spanish fortifications, so we call this site "the fort."

An underwater "wall" begins in front of a small church, extends in a semicircle, and returns to the shore about fifty meters west (Figure 5). The wall is three to six meters high, facing Volcano Island. Large stones (about one meter in diameter) form the base at nine to ten meters depth, with smaller stones higher up the wall (Figure 5). Reeds and moss at the top of the wall inhibit further investigation. What appears to be a "corridor," about two meters wide, faces southwest (like "the wedge") from the wall (Figure 4). It continues about five meters, then disappears into rubble, moss, and reeds.<sup>36</sup>

A farmer showed me a cemetery that he found when excavating land, within one hundred meters of the church and the submerged "fort," and

35. Foreman, *The Philippine Islands*.

36. There are stories of a "cave" in the sapao around "the fort" at the Tanauan site, but we have not found one. (The "corridor" may be what local fishermen call "the cave.")

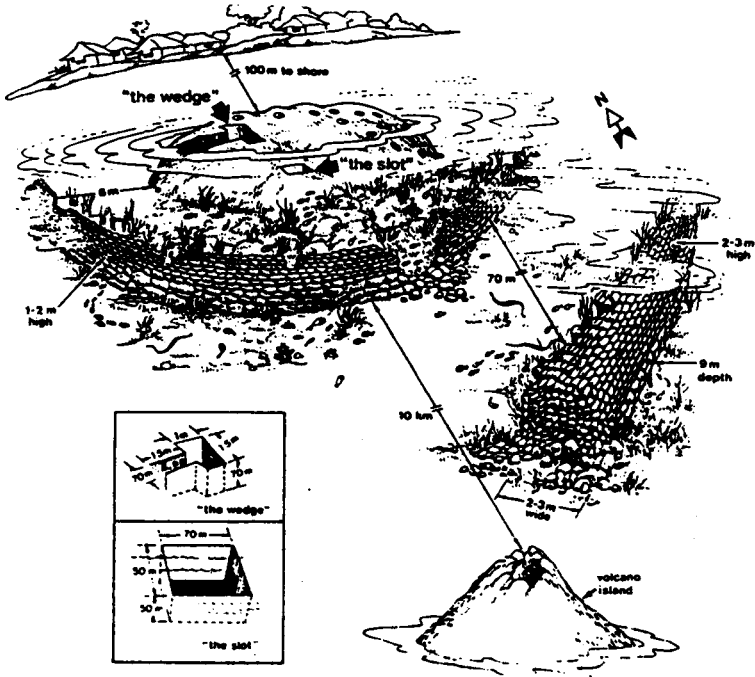


Fig. 4. Artist's rendition of the *sapao* we call "the rock," near where maps show Old Tanauan.

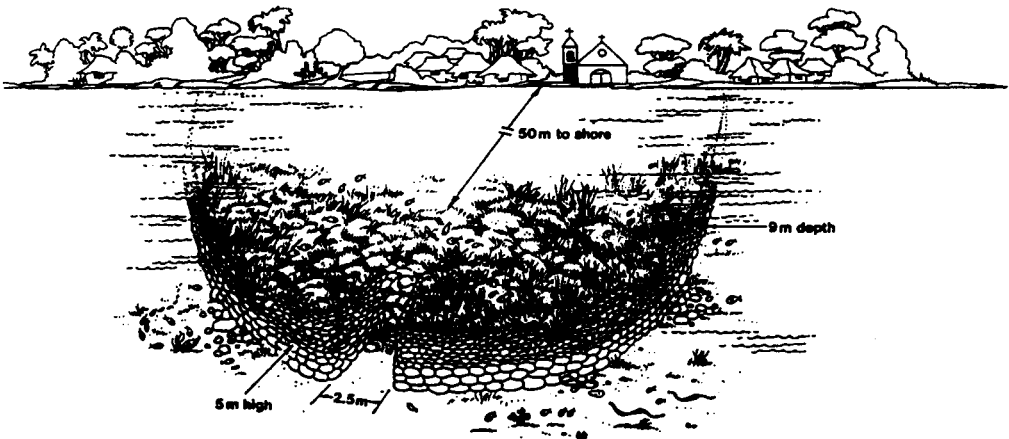


Fig. 5. Artist's rendition of the *sapao* we call the "fort," near where maps show Old Tanauan.

Chinese celadon and Filipino clay pots from the graves. The burial of pottery with the dead supposedly ceased when the Spanish introduced Catholicism.

#### THE EVIDENCE: THE MAPS

The Murillo Velarde map of 1734 (Figure 2), the 1755 map and the maps of Bellin (1734, 1752) and Lowitz (1750)<sup>37</sup> all show the towns on the lake shore, and a clear channel from Lake Taal to the sea. The classic Mercator map (1595) and several others of that era show Lake Taal as a bay of the South China Sea. Those maps were probably drawn by hearsay—but they are additional evidence that Lake Taal was once easily accessible from the sea. Interestingly, Dean Worcester's 1912 map, published in *National Geographic* shows old Lipa north of Lumang Lipa, around our Tangkaban site.

#### THE EVIDENCE: MARINE LIFE

Several early historians refer to Lake Taal's waters as salty and to marine life there. Indeed, if the channel to the sea were even approximately as wide as shown on pre-1754 maps, the lake would have been at least brackish.

The lake teems with black-and-white banded snakes. I had long suspected they were sea snakes. Like those in the nearby South China Sea, these snakes have small heads, larger bodies, and flat "paddle" tails. But I could never photograph one, because when you meet a snake in that murky aquatic forest, it is usually less than a meter away.

We had incredible luck while diving "the fort" in December 1984. We found a dead snake, about one meter long and five centimeters thick, entangled in a piece of fish net on the wall. The snake had apparently drowned a few hours before our dive. Dr. D. Rabor, a respected biologist at the University of the Philippines at Los Baños, identified it as a sea snake (*Proteroglypha* div., Hydrophide fam.). The *Encyclopaedia Britannica* (1960) states "Only one species, *Hydrophis semperi* of Lake Taal on Luzon inhabits fresh water."<sup>38</sup> Ditmars described Hydrophides as

37. Jacques Nicolas Bellin, *Carte des Isles Philippines, dressée sur la carte espagnole du R.P. Murillo de Velarde* [Map] (Paris: par le Sr. Bellin, Ingr. de la Marina, 1734) and *Carte reduite des Isles Philippines pour servir aux vaisseaux du Roy* (Paris: 1752) and George Maurice Lowitz, *Carte Hydrographique & Chorographique de Isles Philippines* [Map] (Nuremberg: 1750).

38. "Snakes," *Encyclopaedia Britannica* (Chicago: William Benton, 1960), vol. 20, p. 853. Taylor (1922) documented that *H. semperi* should be classified as *Disteira cyanosoma*. Biologists have not subsequently agreed, so I refer to *H. semperi*.

“strictly marine and very poisonous.”<sup>39</sup> Medical doctors Watt and Theakston studied nine cases of seasnake bite in a Lake Taal fishing village. One victim died. Specific *Hydrophis* antibodies were detected in three of the eight survivors, proving they were indeed bitten.<sup>40</sup>

Dr. Sherman Minton of the Indiana University School of Medicine wrote that the snake is fairly well known among herpetologists “although few had seen it alive.” Its physiology is typical of marine snakes, with no evidence of secondary adaptation to fresh water. Dr. Minton is convinced that *H. Semperi* is a valid species that evolved *in situ* in Lake Taal. That indicates isolation for thousands of years in salt water.

In 1754 “the lake waters threw up dead alligators and fish, including sharks.”<sup>41</sup> Umali refers to sharks in Lake Taal.<sup>42</sup> Dr. D. Rabor confirms that sharks once swam Lake Taal waters, but says that they were exterminated by overfishing in the 1930s.<sup>43</sup> Freshwater sardines, *Harengula tawilis*, thrive in the lake.<sup>44</sup> Martinez de Zufiga referred to tuna in the lake.<sup>45</sup> Hill wrote that, of the forty-seven types of fish in Lake Taal, “there are several kinds that do not occur in the sea . . . most . . . are marine in origin.”<sup>46</sup> Lake Taal’s fish include a “fresh water species of mackerel, locally called *maliputo*.”<sup>47</sup>

Centeno reported “marine plants similar to those found in the . . . nearby Mindoro Sea,” off Taal’s shores and those of Volcano Island as evidence that the lake was once directly connected to the sea.<sup>48</sup>

I have a piece of old brain coral, about thirty centimeters in diameter, that we found at nine meter depth near the Lipa site. Fishermen have shown me other coral gathered in the lake.

The lake appears larger today than in the early 1700s. I suspect that the land mass is sinking, or the lake is slowly rising, or both. The old maps show Taal considerably south of the lake shore. The Taal cathedral ruins

39. Raymond L. Ditmars, *Reptiles of the World* (New York: The Macmillan Co., 1960).

40. George Watt and R. David G. Theakston, “Seasnake Bites in a Freshwater Lake,” *American Journal of Tropical Medicine and Hygiene* 34 (1985): 770-73.

41. Castro y Amado, “Historia de la Provincia de Batangas,” and Foreman, *The Philippine Islands*.

42. Agustin F. Umali, “Inland Fishes,” *Filipino Heritage: The Making of a Nation* (Manila: Lahing Pilipino Publ. Inc., 1977), vol. 1.

43. Personal communication with Dr. D. Rabor.

44. Albert W. Herre, “Four New Fishes from Lake Taal (Bombon),” *Philippine Journal of Science* 34 (1927): 1-3; Umali, “Inland Fishes.”

45. Martinez de Zuniga, *Estadismo de las Islas Filipinas*.

46. Hill, “Taal and Its History.”

47. Commission of Volcanology, *Taal Volcano*.

48. Jose Centeno, *Estudio geologico del volcan de Taal*, (Madrid: Imprenta y Fundacion de Manuel Trillo, 1885).

are adjacent to the shore. So is its cemetery. I doubt that the Spanish would have buried their dead next to the water.

The Lowitz map of 1750 shows a small island southeast of Volcano Island, and Francisco de San Antonio wrote, in 1738, of "a small rock or islet" to its southwest. No islands are there today but fishermen say the water is only one or two meters deep in an area southeast of Volcano Island.

An 1857 map found in the Philippine National Archives shows "Ruinas de Tanauan" along the northern shore, roughly between Balas and Talisay. An 1860 article in a Spanish magazine states:

You can still find the walls of the old church of Tanauan close to the new town of Talisay; also the walls of Sala, on the left side of the road that goes from the lake to the present town of Tanauan, and those of Lipa, Bauan, and Taal . . . all on the shore of the lake . . .<sup>49</sup>

The unpublished history of Lipa (ca. 1951) states "In Lumang Lipa there is still found the stone foundation of the church erected there." We cannot find such a foundation. The sapao we have found in the lake waters north of Lumang Lipa could be those ruins, but could the water level have risen eight or nine meters in thirty-five years? Worcester's 1912 map, and others of that era, show Lipa and Tanauan ruins at the water's edge. He also wrote that parts of Lake Taal's northern shore sank several meters after the 1911 eruption.

In 1937, Hill wrote that "part of the submerged town of Taal can be seen at times below the lake surface." An IRRI group dived, with snorkel and fins (no scuba equipment), opposite the Taal cathedral ruins 1983 but found nothing. The lake bottom drops at about forty-five degree angle just south of the furthest "walls" we have found, about 200 meters from the shore and 100 meters past "the rock" at the Old Tanauan site. We have noted a change in the lake bottom, from silt and mud to coarse volcanic gravel and sand, with thousands of cone shells, where the steep dropoffs begin at the Lipa Bay and Lumang Lipa sites. That suggests the dropoffs may once have been ocean shorelines.

49. H. Ipsendonyer, "El Volcan Taal," *Ilustracion Filipinas: Periodico Quincenal*, 1 June 1860, Manila.

## TWO THEORIES

Pedro M. Picornell points out that the anonymous 1755 map shows an *open* channel to the sea, even though the 1754 eruption reportedly blocked the channel. The document reports a "terrible flood" in Taal on 10 November and another in Lipa on 25 November. Typhoons probably caused both floods. But the waters subsided within a few days in both cases which indicates that the channel was still open.

Picornell's theory is that the channel to the sea was blocked in early December 1754 by volcanic matter and the heavy rains of mud (a result of typhoon rains mixing with enormous clouds of ash and dust). But the dry season began in January, so the priest did not realize the implications of the blocked channel. Residents probably abandoned their towns, but the ruins may still have been on dry land. But June brought the 1755 monsoon season, and the lake waters began to rise and cover the ruins.

Picornell also suggests that we have discovered only the upper portions of stone buildings. Their true bases may be under another three or four meters of mud and ash. That, plus the fact that the natives would have returned to the ruined towns to salvage any remaining valuables during the 1755 dry season, helps explain the relatively few artifacts found at the sites.

Another theory revolves around the origin of the unusual Tagalog word *sapao*, which Lake Taal fishermen use to describe "the walls." Filipinos have different interpretations of the word, and how it might have evolved in the Lake Taal vocabulary. *Sapao* is not found in modern Tagalog dictionaries, but most Filipinos think the term implies "prevention of encroachment" or "levees of stacked stones." Dr. I. Medina found, in an early Spanish-Tagalo dictionary, the following definition of *sapao*: "a swelling of water . . . covering the land."<sup>50</sup> These interpretations suggest that the walls might have been called *sapao* when they were on dry land, but the fishermen have adjusted the word's meaning to fit those walls as they know them today ("built-up structures under the water").

Fortifications are a logical explanation of *sapao*, if the word implies resisting encroachment. Indeed, many of the walls seem too thick to be part of ordinary buildings. But would the Spanish have considered Tanauan and Lipa important enough to warrant massive fortifications?

50. Juan Noceda and Pedro San Lucar, *Vocabulario de la lengua tagala* (Manila: Ramirez y Giraudier, 1754; second ed., 1832; third ed., 1860).

## CONCLUSION

We offer, finally, a theory fairly consistent with Picornell's, that might explain some (but not all) of the *sapao*:

Late 1754 and for a few subsequent years. Fr. Bencuchillo aptly describes the aftermath of Taal Volcano's recent eruption: "The beautiful town of Taal remains a deserted wilderness where once it was one of the richest and most flourishing places . . . houses have either collapsed . . . or have disappeared completely, swept away by the waves. . . . All the animals . . . have perished, some by being buried, others by drowning, the rest by starving."<sup>51</sup>

Most frightening, the lake waters are rising, and threatening the stone churches and convents, and homes that the people and priests of Tanauan and Lipa built over 150 years. (In fact, the land mass may have been sinking.)

The Augustinian priests mobilize the villagers to build massive walls or levees to hold back the lake waters. They call these walls '*sapao*.' Thus the original town of Tanauan (and perhaps Lipa) becomes a 'walled city.' But the lake waters continue to rise, and slowly submerge the sinking levees, along with what remains of Tanauan and Lipa. The citizens finally abandon their towns. Today Lake Taal fishermen still call the walls '*sapao*'—even though they are submerged as deep as ten meters.

Submergence may have taken years or centuries, and may continue even today. It is a theory that challenges future investigators.

## ACKNOWLEDGEMENTS

About forty historians, archaeologists, marine biologists, medical researchers, priests, and fellow divers reviewed this manuscript—and gave an agricultural scientist the confidence to team up with a historian to prepare a historical and archaeological article. First, we acknowledge Urbito T. Ongleo, who stimulated the first Lake Taal dive and has been guide and interpreter in most subsequent dives. Bito's rapport with the Taal fishermen has been invaluable. We are deeply grateful to Manila historian Pedro Picornell, who has shared rich knowledge of the Spanish era in the Philippines. He has translated Spanish-era documents, meticulously checked translations against original manuscripts, located "new" documents about the 1754 eruption, and helped interpret our findings. His daughter, archaeologist Isabel Picornell, dived with us, confirmed

51. Worcester, "Taal Volcano."

that the underwater structures seem man-made, and helped determine their former functions. Ms. Maria Kalaw Katigbak shared knowledge of her family's long history in Lipa. Fr. Luis G. Merino (O.S.A.) showed me references to the 1755 document and map, and Laura Villarreal and Tiff Harris of the International Center for Maize and Wheat Improvement (CIMMYT), Mexico, located them in the National Archives. Information on *H. semperi* was provided by medical researchers Dr. Sherman A. Minton of the University of Indiana and Dr. George Watt of the U.S. Naval Medical Research Unit, Manila. M.J. Netzorg introduced the project to historian Dr. Charles O. Houston of Western Michigan University and archaeologist Dr. Wilhelm G. Solheim II of the University of Hawaii of Manoa. Only Ranjiv Khush, now a Ph.D. candidate in genetics at the University of California at Davis, and more recently, Miles Hargrove, have repeatedly dived with the senior author into the murky waters of Lake Taal.