



# ETERNAL BLUE





HERE I WAS, DIGGING IN THE SAND  
ALONG THE MEXICAN SHORES  
OF HUATULCO, A SLEEPY LITTLE  
TOWN WITH NATURAL COVES,  
LAGOONS, AND MAGNIFICENT CLIFFS  
OVERLOOKING THE ENDLESS OCEAN.  
THIS WAS NO VACATION, THOUGH. I  
WAS ON A MISSION — TO SEARCH OUT  
A PARTICULAR SNAIL AND TEST IF ITS  
SECRETION COULD BE USED TO FULFILL  
THE LOST MITZVAH OF *TECHEILES*

BY **Baruch Sterman**

PHOTOS **Nestor Diaz Diego**

“Just spit at it,” Delia told me.  
“What did you say?” I asked,  
assuming I had heard wrong.  
“You have to irritate it,” she  
explained, “and nothing irritates  
a snail more than someone  
spitting at it.”

I did what I was told.

After all, Delia was a marine biologist, our expedition’s resident expert on all things malacological. Sure enough, from underneath the operculum, the hard fingernail-like covering the snail uses to seal itself in its shell, a yellow slime began to ooze. It turned out to be quite an amount, maybe two milliliters or so, and certainly more than I had imagined such a tiny creature could produce. Small bubbles formed around the perimeter of the snail’s aperture as it filled with the precious liquid.

Habacuc (pronounced Habakuk) wagged his finger, as if warning me to be careful. I didn’t understand then, but later I came to appreciate his wisdom and experience. It turns out that sometimes when you spit at a snail, it might just spit back. The things you can learn from a Mixtec Indian with the name of a *navi*...

I should have heeded his warning. At 75, Habacuc Avendaño was the oldest and certainly the most experienced of the Mixtec dyers. His ancestors have been coming to these rocky shores of Huatulco, in the Oaxaca region of southwest Mexico, for countless centuries. Habacuc has been dyeing his entire life and knows



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the snails intimately, their characteristics and habits, their environment, their likes and dislikes. He is also very conscious of the precarious situation they now face as modern developers, who have discovered the beauty (and lucrative potential) of the Pacific beaches, threaten their habitat and resources.

What brought me, an Orthodox Jew, all the way from Israel to Huatulco? It wasn't the luxury apartment boom. It wasn't tourism either, which is the main draw of this sleepy little town with its gorgeous natural coves and lagoons, and its magnificent cliffs overlooking the endless ocean. I was on a mission, traveling literally around the globe, to study the *Plicopurpura pansa* snail and test if its yellow secretion could be used in the service of Hashem to fulfill the mitzvah of *techeiles*, that precious blue thread the Torah commands us to wear on our tzitzis (Bamidbar 15:37).

For the past 25 years, as cofounder of Ptil Tekhelet (along with my close friends Joel Guberman and Ari Greenspan, and our mentor Rav Eliyahu Tavger), I have been blessed with the *zechus* to be involved in the renewal of the mitzvah of *techeiles*, the only mitzvah in the Torah to have been completely lost — and then, in our opinion, revived.

"*V'nasnu al tzitzis hakanafpsil techeiles* — And they shall put on the corner fringe a thread of *techeiles*," is read every day in the Shema. Yet for the past 1,300 years, the mitzvah of *techeiles* was lost, and the identity of the marine creature that produced the dye, the *chilazon*, as it is called in the Gemara, as well as the methods of obtaining and processing its fluid, fell into obscurity.

It was only very recently that the convergence of renewed study of the relevant Torah sources, chance archaeological finds, and serendipitous discoveries in marine biology and dye chemistry, has led many to the conclusion that the source of the ancient *techeiles* was the Mediterranean sea-snail *Murex trunculus*. Although most Jews continue to wear the traditional tzitzis with white strings, there is a greater interest to-

day in *techeiles* strings in many Jewish communities.

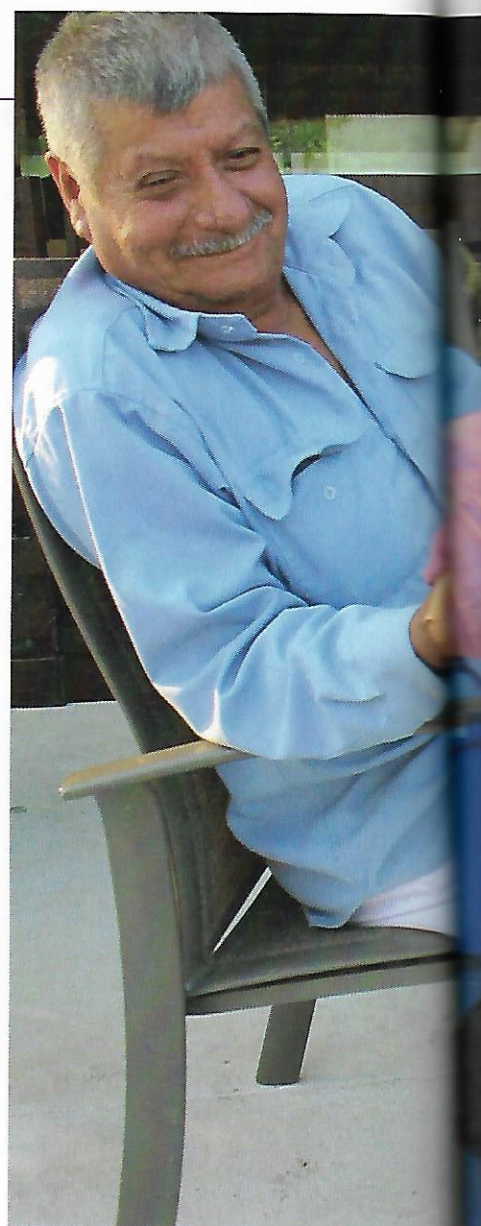
But this growth in demand and production has left us with a sense of concern and a feeling of deep responsibility. We at Ptil Tekhelet want to ensure that *techeiles* will be affordable and available to every Jew who chooses to wear it, now and for future generations. It was this sentiment that brought me to Huatulco in Mexico.

**Snail Suppliers** The Gemara contains many interesting descriptions and statements regarding the *chilazon*, including how and where it is caught, and how the dyeing process was carried out. The writings of contemporary Greek and Roman naturalists augment the Talmudic accounts. Like today, in ancient times the snails were caught in baited nets and the dye was extracted by breaking open the shells and removing a tiny gland covered with mucus — what the Gemara calls *dam chilazon*, the blood or secretion of the snail. This must be done while the snail is still alive because, as the Gemara states (*Shabbos* 75a), the dyer "prefers that it should be alive, so that the dye should be clearer."

The *chilazon* was found throughout the Mediterranean, "from the cliffs of Tyre to Haifa" (along the northern coast of Israel and into Lebanon), and as far as the Isles of Elisha (probably Cyprus, Crete, Greece, or Italy).

Over the years, we have obtained our snails from a number of places. At one point, we were importing them from southern Spain, but then an oil spill off the coast of Gibraltar led to a complete ban on fishing in that region, thus shutting off our supply for nearly two years. This event taught us caution as well as the importance of stockpiling reserves of dye to ensure uninterrupted production of *techeiles* regardless of man-made or natural disasters. Though our supply of snails is currently abundant and stable, we are constantly looking for additional sources.

That is why I was intrigued when I received an e-mail from Kathy, a school



Habacuc's family has been dyeing beautiful purple fabrics for generations. When I manipulated the dye with sunlight and my fabric turned blue, he was sure it was some kind of chemical trick



**IT WAS CLEAR THAT CHAZAL NEVER HAD ACCESS TO THE MEXICAN MOLLUSKS, WHICH ARE FOUND ONLY IN THE PACIFIC OCEAN AND WERE CERTAINLY NOT USED FOR MAKING TECHEILES IN BIBLICAL OR TALMUDIC TIMES**

teacher in Chicago, who had read my book, *The Rarest Blue*, which tells the story of the loss and rediscovery of *techeiles*. Kathy traced her family roots back 500 years to Marranos who fled Spain and the Inquisition to the promise of safety in the New World. They settled in the hills of Oaxaca, Mexico, in the small town of Pinotepa de Don Luis, which happened to be home to a large population of Mixtec Indians, an indigenous people who had been living in that region for thousands of years.

One of the most noteworthy features of Mixtec culture is their use of sea snails to dye beautiful purple fabrics for commercial as well as ritual purposes. Kathy's family still lived in Oaxaca, and she asked if I would be interested in joining her on her next visit to meet the Mixtec dyers and to

learn about their methods.

Beyond my sense of adventure, and curiosity about an exotic culture and a fascinating history, and even apart from the practical and ongoing search for alternative supplies of *techeiles* dye, the trip held a special fascination for me. I was aware that over the centuries the Mixtec dyers had perfected a unique method of "milking" their snails, and could obtain dye from the same snail multiple times, sparing them so that they could live — and dye — another day. Might this be a technique that we could potentially employ in our *techeiles* dyeing? I replied to Kathy that, of course, I would be excited to visit the Mixtec.

In preparation for the trip, I consulted with several *rabbanim* regarding the halachic issues involved in the possible use of the Mixtec snails, *Plicopurpura pansa*, as a source for *techeiles*. After all, it was clear that Chazal never had access to the Mexican mollusks, which are found only in the Pacific Ocean and were certainly not used for making *techeiles* in Biblical or Talmudic times.

Some *rabbanim* with whom we consulted were doubtful that any snail other than the authentic Mediterranean *Murex* could be a valid *chilazon*. They were further skeptical about the Mexican snail and its unique method of dye expression. They quoted the Gemara in Shabbos (75a) that discusses killing the snail — "*Hatzad chilazon v'hapotzo* — One who traps the snail and breaks it open" — which would indicate that this method of obtaining the dye as opposed to the Mexican "milking" is an integral part of the process from a halachic standpoint. Moreover, that process might describe an identifying feature of a particular snail that alone could be used for *techeiles*.

Another *posek* with whom I consulted looked at the snail question a bit differently. He responded that the main halachic constraint regarding the source of kosher *techeiles* is "*techeiles ein keshera ela min hachilazon* — only *techeiles* obtained from a *chilazon* is acceptable." Was the Mexican



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snail a *chilazon*? “The definition of a *chilazon* is a sea creature with a hard shell,” he answered, “so I would tend to think that [the Mexican snail] is permissible to use for *techeiles*.”

I was encouraged by that approach, which warranted, at the very least, a more thorough exploration of the topic to bring a more complete set of facts back for *rabbanim* for their consideration.

**Blue Like the Sky** Traveling from Israel to Oaxaca (a long and exhausting journey that took me more than two full days and three canceled flights) reminded me of another trek taken in the service of *techeiles*, almost 130 years ago. In 1889, Rav Gershon Henoch Leiner, the Radziner Rebbe, left his chassidim behind and traveled from his home on the border of Poland and Russia across the continent to the southern tip of Italy and the city of Naples. There, in the newly opened aquarium — the very first of its kind — the Rebbe searched for a creature that might fit the descriptions of the *techeiles chilazon*. After a year he returned to Radzin triumphant, having determined that the cuttlefish *Sepia officinalis*, was the authentic *chilazon*, and he had procured a recipe for turning its brown ink into a deep blue dye. Though thousands of his chassidim were soon wearing *techeiles* on their tzitzis, the Rebbe’s innovation never really caught on beyond his community.

Various objections were raised to identifying the cuttlefish as the *chilazon*, but the most compelling challenge was delivered nearly a quarter century later by Rav Yitzchak Isaac HaLevi Herzog. Still a young man in 1914 (later he would become chief rabbi of Ireland, then the first chief rabbi of the State of Israel), Rav Herzog wrote a doctoral dissertation on “Hebrew Porphyrology” (a word he coined to mean the study of purple). He examined the top-

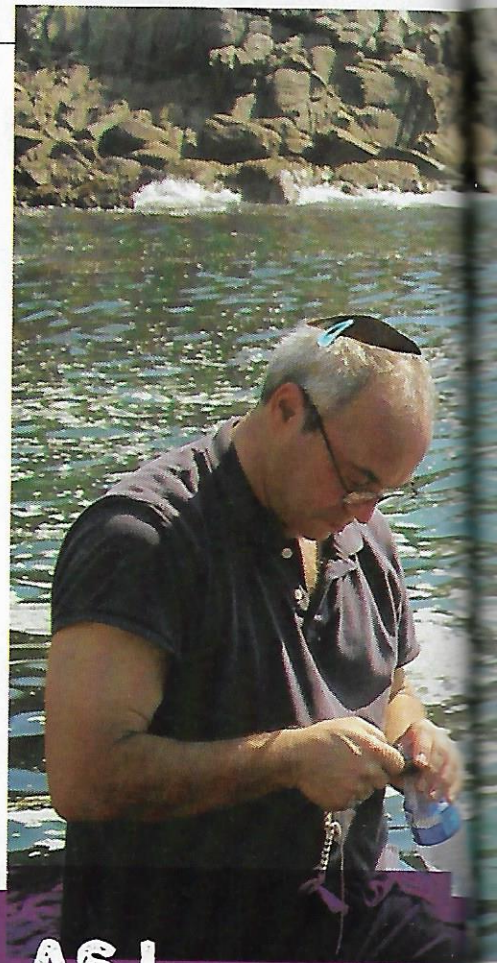
ic of *techeiles* from every possible angle, and as part of his research, Rav Herzog had strings of Radzin *techeiles* examined by laboratories across Europe. Based on their findings, along with correspondence with the dyers of Radzin (Rav Gershon Henoch himself died in 1891), Rav Herzog determined that the blue color of the Radzin *techeiles* came not from the sea creature itself, but rather from the chemicals added as part of the dye process. Therefore, he felt that this could not be authentic *techeiles*.

Already at that time, Rav Herzog believed that the *Murex trunculus* snail was the most likely candidate for the *chilazon*. He hesitated to make that determination conclusively, however, for a number of reasons, the most crucial of which was that the *Murex* snail produced a purple dye. *Techeiles*, Rav Herzog emphatically asserted, must be blue like the sky, so that when we look upon the thread — “*u’re’isem oso*” — our thoughts are raised to the heavens, to Hashem, and to His mitzvos.

The resolution to this problem would not come in Rav Herzog’s lifetime. It was only in 1985, close to 25 years after his death, that researchers in Israel discovered that at a particular stage in the dyeing process, exposure to sunlight could turn the *Murex* dye from purple to a beautiful shade of pure sky-blue.

On the plane to Mexico, I felt a deep appreciation for the Radziner’s work. He had laid the groundwork for the rediscovery of *techeiles*, had written three books discussing all aspects of the halachos involved, and opened the hearts and minds of Jews to the importance of this mitzvah and to the possibility of its being fulfilled once again. Both he and Rav Herzog had become my role models, mentors, and inspiration.

**Smell of the Snails** At the Oaxaca airport, I was greeted by Kathy and Dr. Marta



**AS I  
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THE  
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Habacuc was happy to hear that my family, like his, also complains about the smell after handling snail secretions

Turok, an anthropologist with the Mexican government who had spent decades researching the Mixtec peoples. They had prepared a packed agenda for the week, but the most important part for all concerned was working with the dyers and the snails, and trying to determine if the purple dye they produced could indeed be used to make *techeiles*.

We got to work almost immediately, going directly to one of the beaches in Huatulco, where I met the rest of the team. Delia was a marine biologist at the University of Nayarit, Mexico, who had spent many years researching the *Plicopurpura*, their life cycle, anatomy, and environment. And, of course, Habacuc, the Mixtec dyer — the oldest and most experienced of the nine remaining traditional dyers still practicing the ancient craft.

The first day we took a trip to the rocky shore to view the snails themselves and to

experience firsthand the dye secretion. The *Plicopurpura* adhere to rocks just above the waves, and when you pull them off — and it does help to spit on them — a yellow liquid starts to collect inside the shell aperture. I let it ooze out onto my hands and watched as over a few minutes the yellow turned purple. This was not surprising to me. The dye from our Mediterranean *Murex* snails undergoes the same transformation as we break them open and extract the gland that is covered with a similar yellow paste.

As I expected, the purple stained my fingers, and I knew it would take a few weeks to fade. I smelled my hands and recognized the familiar pungent garlic-like odor. Habacuc watched what I did, and I mentioned (with Delia translating) that our snails back in Israel had the same smell. He was excited to hear that and told me that when he comes home from dyeing, his family complains about

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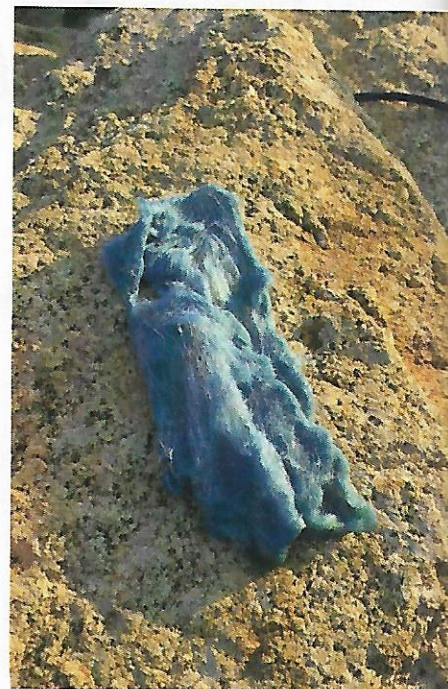
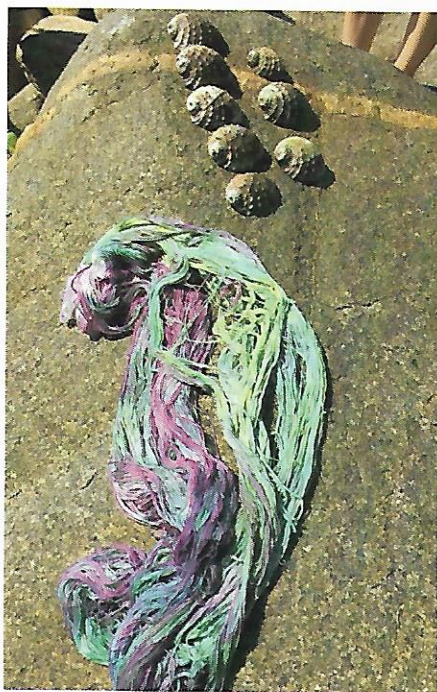
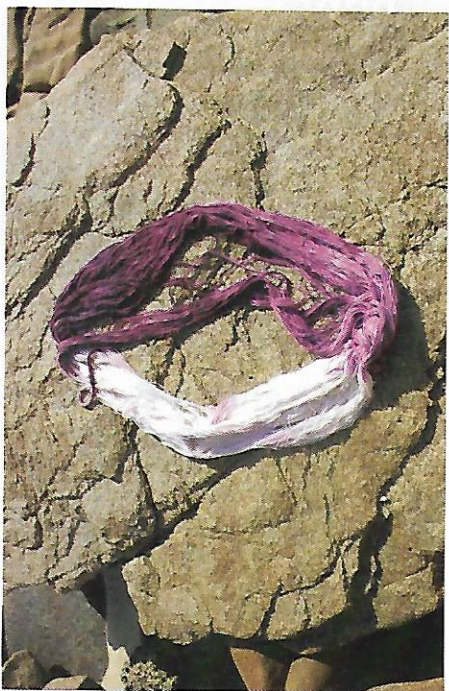
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I had no way to accurately measure the chemicals, and I wasn't sure that so late in the day the sun would be strong enough for my crude experiment: would the fabric change from purple to blue?

the smell. I exclaimed that my family feels the same way, and we both laughed. It was an interesting moment: two men from opposite sides of the world, from cultures and backgrounds poles apart, with no common language, yet connected in some deep way through their shared appreciation for the wonders of the magnificent dye-producing snails — he for his reasons and I for mine.

My first encounter with the *Plicopurpura* encouraged me, since the characteristics of its secretion were comparable to those of the yellow substance we obtained from our snails. The real test would be to see if that secretion behaved similar to the *Murex* during exposure to sunlight and if it indeed could be transformed into *techeiles*.

That night we learned more about the Mixtec and their purple dyeing. Traditionally, only men may do the dyeing, and it is forbidden for women to touch the snail, called *T'shiinda Ya-A* in Mixtec. In old times, the dyers, *Ra Yaki Yuba-A* —

literally, the men who dye threads — would come down from Pinotepa de Don Luis in the mountains to the coast of Huatulco, a trek that took up to 12 days on foot, laden with as much cotton yarn as they could carry. They would spend weeks dyeing all those threads, and working in the local fields in return for food and shelter.

After three months or so, when all the cotton was finally dyed, they would return to the village, where the women would weave the purple threads into scarves, shirts, and especially skirts. The most beautiful and meaningful of the skirts was called a *Che-Eh*, and it was worn by a bride at her wedding, after which it was set aside, never to be used again until her death, when she would be buried in it.

I was struck by the symbolism of the purple color, which the Mixtec associated with blood — the blood of childbirth, fertility, and death.

In the ancient Mediterranean and Near Eastern cultures, the association of purple

and blood came to represent the victorious hero in battle. The most prestigious of all Roman dress was the toga *picta*, all purple and hemmed in gold, worn only by a triumphant general returning from war. The connection of purple (*argaman*) and blood is noted by the Ramban as well, who explains that in the Mishkan, the Mizbeiach was covered with a purple cloth because the blood of the *karbanos* was sprinkled on it.

Though purple was prized above all other colors, both by the Mixtec and the ancient cultures around Israel, the Jews esteemed the sky-blue *techeiles* as the most valuable and holiest of all colored fabrics. Purple, though beautiful, is earthy, but *techeiles* soars above and reaches to infinity. The Gemara in *Sotah* (17a) states: "Rabi Meir would say: 'Why is *techeiles* singled out from all the colors? Because *techeiles* is similar to the sea, and the sea is similar to the sky, and the sky is similar to [Hashem's] Holy Throne.'"



**Breaking the Bromine Bonds** The following day we set out early by boat under Habacuc's direction to a secluded cove that held a very large number of *Plicopurpura*. Our anthropologist explained that the Mixtec, who have been dyeing for centuries, adhere to four principles that have helped keep the snail population healthy and strong. First, they do not touch snails that are mating, so as not to interrupt the reproductive process. Second, they do not use juvenile snails. Third, they do not come back to the same cove until at least one month has passed. And last, they take care not to harm the snails and to gently return them to the rocks after "milking."

I followed Habacuc over the slippery rocks in search of the snails. He would take each snail and lightly press it against the cotton threads, which absorbed the yellow liquid. As the day progressed, the skein of

yarn changed colors from shades of yellow to green and eventually, to its final purple. I was busy meanwhile collecting the liquid from each snail in a bottle, one by one, drop by drop. Habacuc and I worked together for close to six hours under the hot equatorial sun.

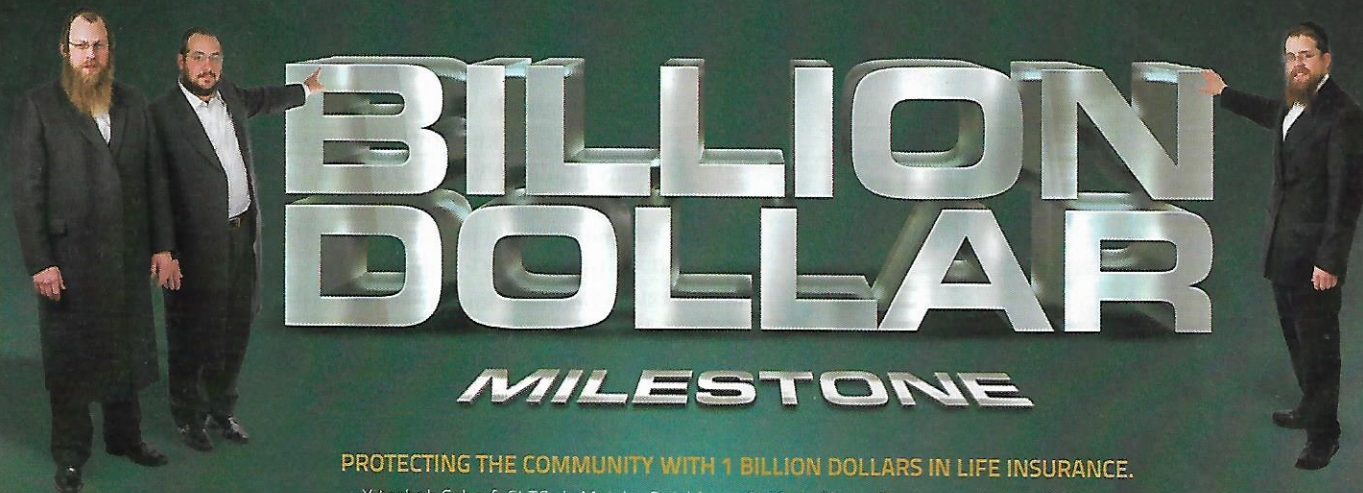
After milking close to a hundred snails, I had about a quarter-cup of liquid, which had turned a rich dark purple. Habacuc was annoyed with me, since as far as he knew, once the snail discharge turned purple, it would no longer adhere to the threads. In other words, he felt that I had wasted all that dye. But I knew that the ancient Mediterranean dyers who broke open their snails and collected the glands had learned to take that purple and process it, so that it could adhere to a fabric and be used for dyeing.

The Gemara tells how the great Amora Abaye, who lived in Bavel far from the

*techeiles* factories of Eretz Yisrael, asked Rav Shmuel bar Rav Yehuda: "*Ha tachilta, hechi tzaviso la?*" — This *techeiles*, how do you dye it?" Rav Shmuel, who lived in Eretz Yisrael, explained how the dyers took the "blood" (secretion) of the *chilazon*, added chemicals, and boiled the mixture in a vat. And that was precisely what I intended to do with the liquid in my bottle.

Back in Huatulco, I set to work on the final and crucial part of my experiment, and I was nervous and unsure if it would succeed. Were these Mexican snails really similar to their Mediterranean counterparts, and would the dye obtained from them have identical properties and characteristics? My conditions were far from laboratory grade, as the dyeing would take place outside, over a chafing dish burner that we got from a nearby restaurant, and I would be mixing

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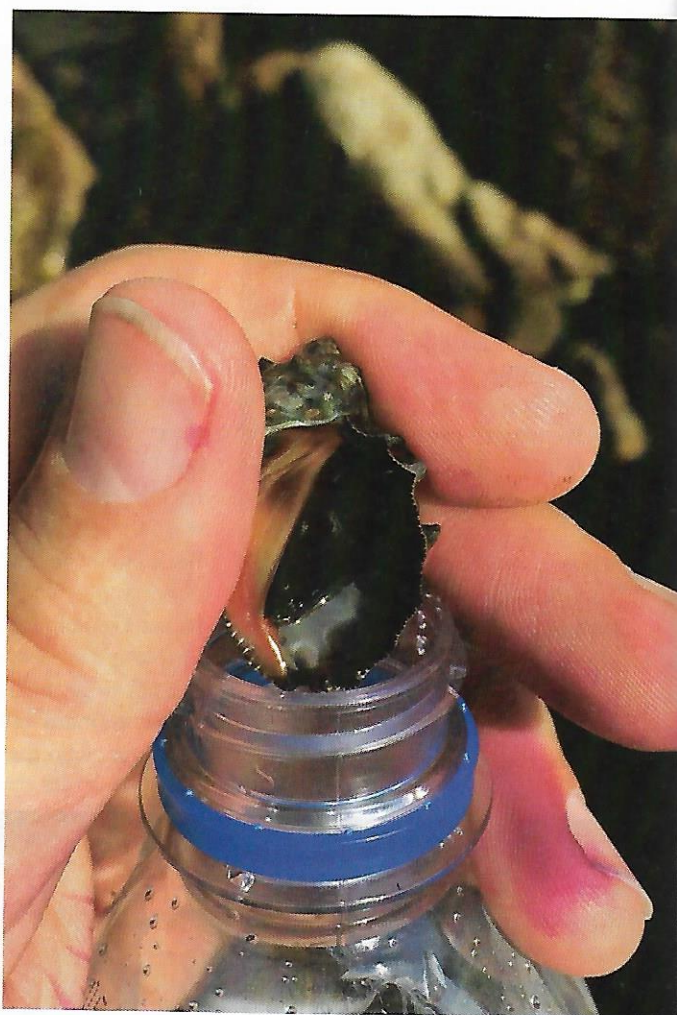


## Eternal Blue



We would probably never use these Mexican snails instead of the authentic *Murex Trunculus*, but it surely seemed that we'd extracted *techeiles* from a snail far away from the Mediterranean

THEY HANG FROM  
THE CORNER OF  
YOUR GARMENT  
AND EXTEND  
BEYOND THE  
EDGE, FULL  
OF POTENTIAL  
AND OFF INTO  
INFINITY. THE  
GARMENT  
SYMBOLIZES  
WHAT YOU ARE,  
THE TZITZIS  
SYMBOLIZE  
EVERYTHING YOU  
COULD BE



in chemicals with no accurate way of measuring the amounts or knowing the concentration of the dye within my liquid. It was also late in the day, and I was worried that the sunlight might not be strong enough to effect the changes from purple to blue.

In terms of chemistry, I was going to put the dye into a condition known as reduction to dissolve it in water, allowing the wool to soak it up. In that state, the ultraviolet rays of the sun would break the bromine bonds, after which, removing the wool from the water and into the air (oxidation) would lock the molecules firmly within the wool fibers. In practical terms, I would be turning the purple liquid a dark yellow-green, exposing it to sunlight, and immersing the wool. If everything went as planned, when I removed the wool it would change from yellow to blue.

The entire process took about 45 minutes, and with our entire team looking on, I finally extracted the tuft of



wool and waited. Slowly, magically, the color began to transform. First bright yellow, then green, then gray, and finally, a majestic, gorgeous blue — so similar to the Pacific Ocean behind me and the tropical sky above. For the first time in history, *techeiles* had been obtained from a snail outside the Mediterranean, and without a single creature being harmed.

**Beyond the Edge** The remainder of the trip was wonderfully exciting, informative, and educational, and an opportunity to forge a connection with exceptional people and far-off places. One incident stands out in my memory and made a deep impression. Habacuc had not been particularly moved by the fact that we could obtain blue dye from his snails and felt that it was just some kind of chemistry trick. One evening I was explaining the meaning and importance of *techeiles* in the Jewish tradition, and took out my tallis. I showed the tzitzis — white and *techeiles* — and the intricate tying method (tying tzitzis with *techeiles* is very different from tying all-white tzitzis). I unfolded my tallis and showed him how every morning I wrapped it over my head and around my body and quoted the *pasuk*, “*U’vnei adam b’tzel kenafecha yechesayun* — that all men take refuge in the shadow of Your (Hashem’s) wings.” Coming out from under my tallis I glanced at Habacuc and saw that he had a tear in his eye. I thought of how beautiful the mitzvah of tzitzis really is, something taken for granted and lost in the routine of daily habit.


It reminded me of an idea that the Radziner Rebbe suggested to explain why we wear tzitzis specifically on the edge of the garment. A person’s clothes represent his character, his station, the image he wants to portray to the world. “Clothes make the man,” and to a certain extent

define him. But that self-definition can also be constraining, because it limits you to what you are now, to your daily structure, and what you believe to be the extent of your capabilities. It confines you to your perceived limitations and self-imposed boundaries. But the *techeiles* and white strings of the tzitzis break through those boundaries; they hang from the corner of your garment and extend beyond the edge, full of potential and off into infinity. The garment symbolizes what you are, the tzitzis symbolize everything you could be.

Back in Israel I met with my friends, the cofounders of Ptil Tekhelet, to debrief and discuss the trip. We recognized that there was much more work and research necessary before any practical applications could be considered, not only in terms of logistics and technical issues, but even more so in the realm of halachah. We would need to consult with *rabbanim* to probe their views, and we realized that in all probability we would never use the *Plicopurpura* snails instead of the authentic *Murex trunculus* to make *techeiles*.

But there is, nonetheless, a very important lesson to learn from the encounter with the Mexican dyers. They have a deep respect for the welfare of their snails, and do all they can to protect that valuable resource upon which they so profoundly depend. We must do no less with our precious resources.

This is part of our solemn and crucial undertaking, of our charge to be *shomrei mitzvas techeiles*. The *pasuk* in Shema says, “*V’asu lahem tzitzis al kanfei bigdeiheim l’dorosam* — And they shall make for themselves tzitzis on the corners of their garments throughout their generations.” It is our responsibility to safeguard and protect the *chilazon* in order to ensure that *techeiles* remains available and affordable *l’dorosam* — for all future generations.



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# THE TECHEILES DEBATE

## The Evidence Is All There

Rabbi Zevulun Kormim

**We** all know that the mitzvah of tzitzis is comprised of white and *techeiles* strings. If *techeiles* is available and one neglects wearing it, he has neglected a *mitzvah d'Oraisa*. But is the *Murex trunculus* snail the correct source of *techeiles*?

One brief introduction: Rav Chaim Kanievsky related to Rav Moshe Mordechai Karp (the noted *posek* of Kiryat Sefer) that anyone choosing to wear *techeiles* may do so publicly; and in a video on [techeiles.org](http://techeiles.org), Rav Chaim can be seen saying that anyone convinced of the authenticity of the *Murex* is obligated to wear it. Indeed, though *Murex*-based *techeiles* has not gained widespread support, many noted *poskim* and *roshai yeshivah* do wear *techeiles*. What are the considerations that move these Rabbonim to use the *Murex techeiles*?

- Chazal state that the source of the *techeiles* is a *chilazon*, that it must be blue, and that it must remain strong and not fade. *Murex* meets these criteria as detailed below:

The term *chilazon* means a snail as the *Pesikta* (*B'Shalach* 11) states “a *chilazon's* *narteik* (shell) grows with it.” Rambam identifies a certain metal ring as “a shell made of iron, like the shell of the sea creature called *chalazun*.”

Rabbeinu Gershon and Rashi define a *chilazon* as a “*limatz*” in old French. Rashi (*Chagigah* 11a) writes that a *limatz* is a “*sheretz* that grows with a shell which continues to grow around and around” — i.e., a snail. The Aramaic word *chilazon* is identical to the word for snail in Middle Eastern languages such as

Farsi, Arabic, and Syriac.

A number of early and late Acharonim translate *chilazon* as *purpura*, which is a general type of snail, of which *Murex trunculus* is a subspecies. Reb Avraham Harofoi (*Shiltei Hagiborim* Perek 79), Chavos Yair (*Mekor Chaim* 18:3), Tosafos Re'em (*Al Sefer Yereim* 401:17), Rav Hirsch (*Devarim* 33:19).

Chazal (*Menachos* 42b) tell us that false *techeiles* is produced from “*kala ilan*” — i.e., plant indigo (as per *Aruch*), an ancient blue dye. The blue dye produced by indigo (*kala ilan*) is virtually identical to the dye produced by the *Murex*.

- The Gemara (*ibid.*) writes that *kala ilan* will fade after a complicated chemical procedure is applied to the material whereas true *techeiles* will not fade from the material. In fact, the *Murex* snail is known from antiquity as famously color-fast and enduring.

It is clear from the aforementioned Gemara in *Menachos* that these (plant-based indigo and the *Murex*) were the only two items known to Chazal that produce this dye. *Murex* dye existed in the days of Chazal as found in ancient dye pits in the precise locations mentioned by Chazal (*Shabbos* 26a). Since both *Murex* and indigo produce blue dye, it must be that *Murex* was the *chilazon* that Chazal used.

- Numerous sources in Chazal tell us that *techeiles* was used by royalty. It is well established through historical records that the Romans wished that that *techeiles* be used by royalty exclusively, and therefore banned the use of *Murex* dye by all others.

The timeline of the Roman decrees restricting *techeiles* correspond precisely

with the Gemara's description of the *techeiles* restriction. Indeed, it is for this very reason that it was “*nignaz*” or “stored away.”

Many Rishonim and Acharonim report that *techeiles* can return at any time (*Ma-haril*, *Chadashos* 5). In fact, the Levush (intro to *Orach Chayim*) writes that if *techeiles* is found we are obligated to wear it. These commentators obviously understood that *nignaz* means simply that *techeiles* was hidden; it does not specify for how long and under what conditions.

- The Gemara (*Shabbos* 75a) says the dye is more effective if it is taken from the *chilazon* while it is still alive. *Murex* dye is removed immediately after the snail dies, because the quality decreases the longer the snail has been dead.

- Chazal state that *techeiles* dying was widespread on the Mediterranean coast from Haifa to Tyre, in the very place where huge mounds of *Murex* snail shells have been found with their shells cracked where the dye pouch is extracted.

- The blue color of the Radziner *techeiles* was demonstrated to be produced by an additive, which is obviously not the case with the *Murex*. Nor did that *techeiles* conform with the many proofs detailed above.

There are numerous other sources demonstrating that the *Murex* is in fact the *chilazon*. Readers are invited to visit [techeiles.org](http://techeiles.org) and the numerous (both pro and con) resources cited there to investigate further. Particularly succinct is *Sefer Levush Aron* (downloadable there, both in English and Hebrew) that details the proofs and addresses the objections raised against this identification.



# Is the *murex* really the Biblical source of the mysterious blue dye?

## Reason to Doubt

Rabbi Yirmiyohu Kaganoff

**W**hy do the vast majority of rabbinic authorities reject the *Murex trunculus* snail as the source of *techeiles*?

After all, since one must be stringent regarding doubts of Torah law (*safeik d'Oraisa l'chumra*), perhaps *techeiles* should be worn out of doubt, due to the mere possibility that it is the true *chilazon*.

Without discussing whether *safeik d'Oraisa l'chumra* applies to positive mitzvos, the Radziner Rebbe, “the father of modern *techeiles*” rules in one of his many works that one who is uncertain whether an item is *techeiles* should indeed wear it on his garment. In his opinion — and there is strong halachic merit to this position — nothing is lost by wearing a dye on tzitzis, even if it is not kosher *techeiles*.

If one asks Rav Chaim Kanievsky whether one should wear *Murex*-dyed tzitzis, he will answer simply: The Midrash records that the *chilazon* was “hidden” — and he, as well as many others, take the Midrash literally. Hence, any species to which we have access today cannot be the correct *chilazon*. Obviously then, neither the cuttlefish (a variety of squid) that the Radziner identified with the *chilazon*, nor a sea snail that Rav Yitzchak Isaac HaLevi Herzog identified as *chilazon*, can be the source. Rav Chaim has told people “it makes as much sense to wear this dye on your tzitzis as it does to put a cat on them.”

Obviously, neither the Radziner Rebbe nor Rav Herzog felt that we must interpret the Midrash this way. Yet the consensus of those who disputed the Radziner did. In addition, the Beis HaLevi, Rav Yosef Ber Soloveitchik, objected to the Radziner's *techeiles* based on *mesorah*. According to the version quoted by the Radziner himself, the

Beis Halevi held that since the cuttlefish is a known species, and since for over a thousand years it was not used to dye tzitzis, it cannot possibly be the *chilazon*. Such a *mesorah* would never have been lost.

Rav Joseph Ber Soloveichik, the late *rosh yeshiva* at Yeshivas Rabbeinu Yitzchak Elchanan (RIETS), interpreted his great-grandfather's position differently, namely that a mitzvah object cannot be identified on the basis of logic, but only on the basis of *mesorah*. Therefore, all the proofs in the world cannot demonstrate that a given species is the true *chilazon*.

However, aside from the Midrash and the need for a *mesorah*, there are many other reasons to reject the cuttlefish or any marine snail as the *chilazon*. When the Radziner published his research, he communicated directly with the greatest halachic authorities of his generation, virtually all of whom disagreed with him. None accepted his approach, even to consider it a *safeik*. (The one exception was the Maharsham, who, on the possibility that the Radziner might be correct, reputedly wore a *tallis katan* with Radziner *techeiles*, although he made sure that no one ever saw him do so.) The reasons these *poskim* rejected the Radziner's cuttlefish apply equally to the *Murex trunculus*.

It is true that Rav Herzog rejected the cuttlefish as a source of the *techeiles* because the coloring agent used in the Radziner's *techeiles* was a synthetic dye created by chemicals unrelated to the cuttlefish. However, a careful read of the Radziner's writings will demonstrate that this factor would not have changed his mind, and that the *rabbanim* who objected to the Radziner's *techeiles* did so for reasons that apply equally to *Murex trunculus*-based dye. Among those reasons are the opinions of Rishonim that the *chilazon* of *techeiles* must be a kosher species, and neither the cuttlefish nor the sea snail qualify.



# שמן זית מצופה מן פתח



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In addition, there is a very strong argument running against any sea snail as the source for *techeiles*. Notwithstanding the contentions of *Murex* advocates, the depiction in the Gemara of the *chilazon* as a fish does not fit a snail. And the Rambam's description of the black dye produced by the *chilazon* does not fit *Murex trunculus*. These arguments were not raised against the Radziner's cuttlefish since it does fit the description of the Gemara and the Rishonim.

When Rav Elyashiv was asked about wearing *Murex* dye because of the *safeik*, he answered, very enigmatically: one should not wear it, because when the true *techeiles* becomes available, those who invested in the *Murex* will find reasons to reject the true *chilazon techeiles*.

We should note several factors: In his doctoral dissertation, Rav Herzog concluded that none of the sea snails he had investigated were the proper sources for *techeiles*, although he was convinced that the *chilazon* was a sea snail. He believed this in part because the word *chilazon* means sea snail in other Semitic languages. He also knew that in many ancient societies, dyes were made from sea snail extractions, and that there were sources in Greek literature that discuss creating dyes from snails. I note that none of these factors are halachic.

Rav Herzog also notes that his opinion about the *chilazon* runs counter to Rashi and other Rishonim. The key passage here is a *gemara* in *Shabbos* (75a) ("Hatzad *chilazon* v'hapotzo — One who traps the snail and breaks it open") in which Rashi explains that the word "*potzeia*" means to squeeze. But the *Murex* dye is not acquired by squeezing. Rav Herzog, who assumed that *chilazon* was a snail, explains *potzeia* means to smash, though he concedes that his understanding differs from that of Rashi. Since our halachic knowledge and interpretation in virtually all areas is based on our

*mesorah* from the Rishonim and how they understood critical passages of the Gemara, Rashi's approach is halachically authoritative.

By the way, in Rav Herzog's dissertation, he ultimately rejected all of the sea snails he researched, including *Murex trunculus*, as the source of *techeiles* because they could not produce a light blue dye — and he was convinced, based on Jewish *mesorah*, that *techeiles* is a light blue color. It is true that, since his passing, a method has been discovered whereby one can create a purplish-blue from *Murex trunculus*, but this color is not the sky blue that Rav Herzog thought was the true color of *techeiles*.

There is one strong argument to support the use of *Murex trunculus* as the source for *techeiles*: It is indeed unusual to find sea creatures from which one can obtain a blue dye. However, a lack of knowledge about other marine-based blue dyes does not wash (pun intended) as a halachic argument.

For those who point to archaeological evidence that sea snails were used in Eretz Yisrael for dyeing, I share the following thought: Perhaps the sea snails found were used for dyeing *argaman*, and perhaps the purplish color that one gets from *Murex* is indeed *argaman* and not *techeiles*? Perhaps the true color of *techeiles* is indeed sky blue, as Rav Herzog insisted, and there is a kosher marine creature that Hashem indeed hid that has a black extract, as the Rambam states, and produces a *techeiles*-colored dye when squeezed, as Rashi states?

If someone is convinced that *Murex* is the correct source of *techeiles*, should he wear this dye on his tzitzis? Although both Rav Chaim Kanievsky and Rav Asher Weiss contend that one has absolutely no obligation to wear *techeiles* that comes from *Murex*, there is reason to believe that both *rabbanim* have advised those who believe *Murex* is the true source of *techeiles* to wear it on their garments. I would assume that this would be dependent on their understanding of the halachic rule *shavyei anafshei* (subjective establishment of prohibitions) although I would not want to speak for them. My conclusion is that *shavyei anafshei* applies only to prohibitions and not to mitzvot. ●