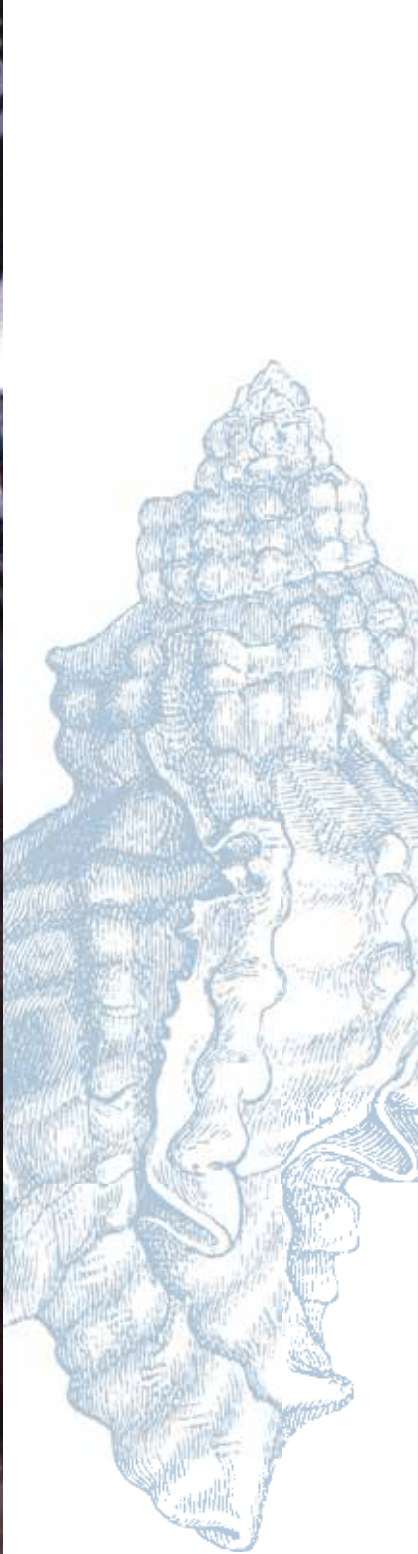




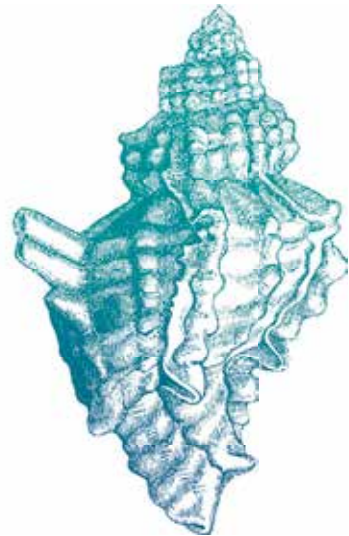
# Techeiles *Trek*



**According to the Ramban, *techeiles* is supposed to take us on an inner journey from the sea to the sky to the throne of Hashem. That journey was aborted some 1,300 years ago, when the knowledge of how to produce *techeiles* was lost. But thanks to a few people on a mission, *techeiles* is back — and if you look closely, you may discover that sky - blue thread hanging from a pair of tzitzis near you**

BY **Libi Astaire**  
PHOTOS **Ari Greenspan**





**STRINGS ATTACHED** The bubbling blue dye is the color of the heavens, but is it the real thing? Ari Greenspan and Joel Guberman (bottom) believe they've discovered the lost ancient secret

**It's rare,** ancient, and sky-blue — and according to Israel Antiquities Authority researcher Dr. Na'ama Sukenik, a fragment of cloth recently found in the Dead Sea region and dating back to the Bar Kochva revolt proves conclusively, at least to the scientific community, that Jews living in Eretz Yisrael wore *techeiles*. The late-December discovery thrilled scientists and historians, who said the tiny piece of cloth was the first tangible proof that Eretz Yisrael

hosted a *techeiles*-producing industry in ancient times.

Of course, Torah-observant Jews don't need archeological proof, since the Torah itself tells us that a *techeiles*-hued dye was once used in the clothing of the Kohein Gadol, the tapestries of the Mishkan, and the tzitzis of every Jewish male.

The only mystery was how our ancestors produced their *techeiles*. But according to the founders of Ptil Tekhelet, the nonprofit organization that sponsored the conference where Dr. Sukenik displayed her find, that puzzle has been solved. In fact, they would like to invite you to see the solution to the centuries-old mystery with your own eyes.

**Dive In** Though it's possible to see the Hand of Hashem at any time and place, scuba diving probably wouldn't be at the top of most people's lists. Yet it was this deep-sea sport that reconnected three high school friends and sent them on a voyage to solve one of the great mysteries of the post-Talmudic Jewish world: the secret of *techeiles*.

"I learned scuba diving after I moved to Israel," explains Ari Greenspan, who is familiar to *Mishpacha* readers as one half of the world-traveling Ari-and-Ari duo. "My father, who was very concerned, said, 'You're married now. You have kids. What do you want to learn scuba diving for? It's dangerous.' I didn't listen to my father's suggestion — and I often think back to that discussion and how the Hand of Hashem guided me."

Ari would go scuba diving for fun with a fellow former NCSYer who had made aliyah, Baruch Sterman. But their diving turned serious when they were approached by yet another NCSY acquaintance, Joel Guberman.

Joel's brother had passed away and he wanted to do something meaningful in his brother's memory. He decided to learn about the mitzvah of tzitzis in depth, which also meant learning about *techeiles*. He contacted Rabbi Eliyahu Tavger, who had made aliyah from the former Soviet Union and had written a seminal work on the



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The three managed to extract some dye from their catch, says Ari. "But it took us about a year until we figured out the process and made our first four pairs of tzitzis. Very quickly people heard about what we were doing and — I'm not exaggerating — we had 600 people on a waiting list."

topic, *Klil Tekhelet*. Rabbi Tavgar had also made a batch of *techeiles* dye, based upon the research that had been done in the early 1900s by Rav Yitzchak Herzog, a former chief rabbi of Israel who had written his doctorate on *techeiles*.

As a first step to putting his learning into practice, Joel needed to find the right snails, which are called *chilazon* in the Gemara. According to Rav Herzog, *chilazon* are snails from the *Murex trunculus* family. Joel contacted Ari, who contacted Baruch, and soon the trio was on their way to Israel's northern coast.

"We first went to Achziv, which is a place that the Gemara mentions as having the snails, but the waves were too big," Ari recalls. "So we went a bit south to Acco. This was probably the first time that anyone had dived to find snails to make *techeiles* for tzitzis in at least 1,300 years. We came out of the water with these snails, and when we started to break them open, these Arab kids started calling out, 'Chilazon! Chilazon!' I got the chills when

**Gone but Not Forgotten** If *techeiles* is such an integral part of the mitzvah of tzitzis, how was the knowledge for how to produce it forgotten?

*Techeiles's* demise began after the destruction of the Second Beis Hamikdash when the Romans took control of Eretz Yisrael. Many Jews were exiled to Babylon, far away from the Mediterranean Sea and home of the snails, so they forgot the process. Back in Eretz Yisrael, around the year 380, the Romans banned the use of the blue dye on pain of death for anyone who wasn't a member of the Roman ruling class.

The colors blue and purple were symbols of royalty for the Romans, as they were in many cultures, for the simple reason that in ancient times those colors were extraordinarily expensive to produce. According to Ari, it can take from 20 to 30 snails to produce enough blue dye for just one pair of tzitzis. The number of snails required to make one garment dyed entirely blue is significantly higher.



# “The process for dyeing the wool was a highly guarded secret because the dye was the most precious commodity in the ancient world”

Thus a person had to be quite rich to be able to afford such a garment — and the Roman conquerors obviously didn't want a wealthy Jew to appear to be on equal footing with a Roman nobleman.

“The process for dyeing the wool blue was a highly guarded secret because the dye was the most precious commodity in the world,” says Ari. “The Greek philosopher Aristotle said the dye was worth 20 times its weight in gold. It's hard to imagine, right?”

To further compound the problem, when the Arabs gained control of Eretz Yisrael they banned all production of the blue dye, which they associated with the Roman rulers they had just replaced.

“Bottom line,” says Ari, “is that it's clear that the Rishonim didn't have *techeiles*. But the source — the snails — continued to exist. We just didn't have access to the Mediterranean and the process.”

**Bringing Back the Blues** It's a sunny winter's day in Eretz Yisrael, the kind of day when the cloudless sky is a brilliant blue. In other words, it's a perfect day to visit the factory of Ptil Tekhelet, the nonprofit organization that Ari, Baruch, and Joel founded in 1993, under the rabbinical guidance of Rabbi Tavger, who is also a member of the Ptil Tekhelet team.

The factory is located in Kfar Adumim, a *yishuv* that is about a 20-minute drive from Jerusalem and on the way to the Dead Sea. Every year, several thousand people — most of them tourists and many of them families — visit the factory to learn

more about the mitzvah of tzitzis and see how the *techeiles* dye is made.

My tour begins with Ari pointing out one of the problems that faced Rav Herzog a century ago: The *Murex trunculus* snail, Rav Herzog's most likely candidate for producing *techeiles*, has a dye that is purple-blue in color and not a pure blue. So if Rav Herzog had the right snail, how does the dye change colors?

Joel, who manages the factory's operations, begins the demonstration that will address this problem by explaining that after the dye is extracted from the *Murex trunculus* snail's gland, it is dried into a powder. He then dissolves some of this powder into a flask and adds a chemical mixture. I don't know how the powder feels, but my initial reaction is to head to the door. This stuff stinks!

Baruch, noting my discomfort, laughs. “The Gemara says that if a woman marries and her husband becomes a dyer, she can ask for a divorce and she will be granted a *kesubah*. Now you know why.”

Indeed I do, and as the demonstration proceeds, I learn something else: The secret ingredient that can turn the purplish-blue dye of the *Murex trunculus* snail into the sky-blue color needed for *techeiles* is one of the most common commodities in this part of the world — sunlight. When the smelly mixture is aired out in the brilliant Israeli sunshine for about 20 minutes, not only does it lose most of its “perfume,” but the color lightens considerably.

This photochemical reaction was rediscovered in 1980 by Professor Otto

Ari and Joel inspect a batch of dye, but they aren't the only ones to claim they've found *techeiles*. Rav Gershon Henoch Leiner ztz"l had his own recipe, extracted from the cuttlefish

times. He was even able to solve the big mystery, which was how to get blue out of it.”

But was this the process used by Jewish dyers during the time of Chazal?

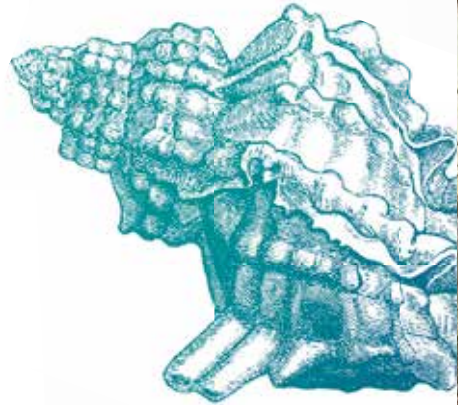
“There are no halachos for how to create a dye that is blue and permanent,” says Ari. “The Rambam tells us that you do it in the same way the other dyers do it. There is no specifically ‘Jewish’ dye process.”

**Unlikely Messengers** If an author writing some 50 years ago had penned a fictional account of how *techeiles* was rediscovered in modern times, he probably would have cast a “mad scientist” type in the starring role. After all, much of the discovery work involved chemistry, which requires a lab. If he were to choose a dentist or an occupational therapist as his hero, people would have written off his account as too improbable even for fiction. How could such a person figure out the science, not to mention the technology, needed to take the wool from sheep to string?

Yet Ari Greenspan is a dentist, and Joel Guberman worked as a pediatric occupational therapist before taking on the management of Ptil Tekhelet. And Baruch Sterman may have a doctorate in physics, but today he works in high tech as a telecommunications and security specialist. So how did such an unlikely trio become the ones to doggedly track down the ancient dyeing process and turn it into a method that can be mass-produced?

“We've seen incredible *siyata d'Shmaya*,”





**SNAIL'S PACE** First the *Murex trunculus* had to be located, then the dye extracted, drop by drop. Meanwhile halachah precludes standard mass production in the *techeiles* factory



## “Halachah doesn’t change quickly, and it shouldn’t. But you can no longer say that it’s just a bunch of kooks who wear *techeiles*”

says Ari. “I can’t say why Hashem put us together at this nexus of time and place, but I can say that none of us could have made this happen on his own. Look at what has to be done to get one *techeiles* string for tzitzis. You have to be able to get the snails. You have to understand how to extract the dye. Then, how do you get wool? And once you have wool, how do you tie it into strings so they can be dyed? And once you dye the strings, how do you let Am Yisrael know that they exist?”

One thing that helped them along the way was a willingness to seek and accept advice from experts. Another help was having a sense of humor, since the path from producing a few *techeiles* strings a year to over 1,000 a month was far from smooth.

“We very quickly realized that we couldn’t spend all our time on the beach looking for snails,” says Ari. “Plus snails are protected in Israel by the Ministry of Nature. At some point, we knew we had to go elsewhere to find them. Since this was before the Internet, we couldn’t just do a search for who had these snails. So I mentioned this *techeiles* project to every patient who sat in my dentist’s chair.”

Finally, Ari found a patient who was going to go to Spain and was willing to find out if the *Murex trunculus* snail existed there. It did. They also found the snails in Gibraltar,

France, Italy, and Greece. But it turned out the Croatia was the better supplier.

The next hurdle was figuring out how to get the dye back to Israel.

“In our early years,” Ari explains, “we would extract the dye in Europe, wherever we found the snails, and throw the dye into bags — and it smelled. You wouldn’t believe how bad it smelled, even when we put the liquid dye in triple- and quadruple-sealed bags. One of the first times we came back from Spain, we got home late Erev Shabbos, and I put my duffel bag with the liquid dye down in my basement. The next day the whole house smelled.

“A day later, my wife said, ‘Ari, it’s really smelling.’ I went downstairs and the bag was huge. The gases were building up and the bag was getting ready to explode. I quickly took it to Baruch’s house, and he put it on his roof. But it still smelled and the neighbors started asking, ‘What’s this dead animal you have on your roof?’”

Fortunately for their wives and neighbors, today they’ve learned to extract the dye in Europe and let it dry in the sun. This way they can bring back just the powder, which doesn’t weigh or smell as much.

Baruch, on the other hand, still clearly recalls their first chemistry lab, a freezing-cold little hut in Efrat that was loaned to them

by Rav Shabtai Rappaport, *rosh yeshivah* of Shvut Yisrael.

He adds, “We had to figure everything out, but we had help from chemists and machinists. We had to try to bring the ancient techniques up to the level of modern mass production, and we had three things that were competing: What is best for the dye, what is best for the wool, and what does halachah let you do. They don’t easily come together. For instance, in a modern dye factory they use pumps to pump the dye through the wool. We can’t use an automatic technique for tzitzis, since according to halachah, when it comes to the actual dyeing of the woolen strings, the person doing it has to have the right intentions.”

**A Knotty Issue** In addition to consulting with Rabbi Tavger about halachic issues, they have consulted with Rav Zalman Nechemia Goldberg and other *rabbanim*. Of course, this doesn’t mean that Ptil Tekhelet’s finished product has received universal acceptance.

“When we started, *techeiles* was something that a few *baalei teshuvah* wore,” says Ari.

Over 130 years ago, the Radziner Rebbe, Rav Gershon Henoch Leiner *ztz”l*, concluded — after his own exhaustive research — that the original *techeiles* was extracted from a certain type of squid called a cuttlefish. Even though

most people today don’t hold by his *shitah* on *techeiles*, the Radziner Rebbe was considered one of the *gedolim* of his day. He was one of the generation’s authorities on Shas and authored an important *sefer* called *Sidrei Taharos* that met with universal acclaim upon publication. Although a small number of *gedolim* endorsed his rediscovery, today only followers of the Radziner’s opinion and Breslover chassidim wear tzitzis with “Radziner” *techeiles*.

“But it was a different *techeiles* than what we were making. Today, there’s much more awareness and acceptance, but can you say that it is widely worn? No.”

Will the recent discovery of the *techeiles*-colored fabric near the Dead Sea, which lends weight to Ptil Tekhelet’s argument that they have solved the *techeiles* riddle, mean that the majority of Jews will now rush to change their tradition?

“Halachah is a process,” says Ari. “Halachah doesn’t change quickly, and it shouldn’t. If it did, it wouldn’t be what it has been for the Jewish People for the past 2,000 years. But you can no longer say that it’s just a bunch of kooks who wear *techeiles*. Today, there are between 50,000 and 100,000 people wearing it — including Rav Herschel Shachter, Rav Yisroel Belsky, and Rabbi Tzvi Hersh Weinreb of the OU.”

“You can reject it because you’re not convinced this is the real *techeiles*, and you can reject it for halachic reasons,” adds Baruch, who notes that on the Ptil Tekhelet website

there are articles that argue both sides of the question. “You can say that the tradition was lost and therefore it can’t be reestablished until Mashiach comes.”

However, the Radziner Rebbe said that Mashiach can’t come until Am Yisrael once again has *techeiles*, which is one reason why he studied the issue in the 1880s. What would happen if today everyone started to wear *techeiles*, in anticipation of the Final Redemption? Is there any danger that there wouldn’t be enough snails to meet the demand?

Naturally, Ari, Baruch, and Joel have already looked into the issue. A few years ago they did a three-year growth study at the University of Miami’s department of underwater research to see if it was possible to grow the snails in captivity. The answer is yes.

Although present-day demand isn’t yet high enough to warrant setting up snail farms, awareness of Ptil Tekhelet’s work is growing. Ari, Baruch, and Joel are often on the road giving classes and lectures about the mitzvah of tzitzis and *techeiles* and they say that their audiences are enthusiastic.

But the ultimate thrill for everyone associated with the Ptil Tekhelet project comes from knowing they are helping to make possible a positive mitzvah from the Torah that Am Yisrael hasn’t been able to perform for 1,300 years.

“Every *rav* has to look into it and make his decision,” says Ari. “But we would like people to know that the opportunity to wear *techeiles* now exists.” ●