

Google smart lens to focus on diabetics' sugar levels

By **Jenny Hope**
Medical Correspondent

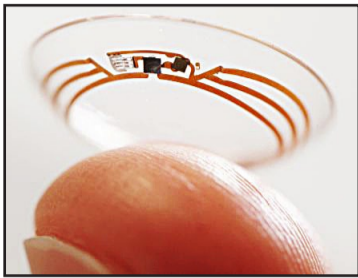
A SMART contact lens could help diabetics keep track of their blood sugar levels without having to jab their fingers with a needle.

Experts say the device could be a painless way to help millions who otherwise need to draw blood up to ten times a day.

The new technology developed by Google uses a tiny wireless chip and a miniaturised glucose sensor to track glucose levels from the wearer's tears.

The device looks like a normal contact lens, with the chip embedded between two layers of lens material and sited outside the range of the pupil and iris so as not to interfere with vision.

Sandwiched in the lens are two glitter-specks loaded with tens of



Vision of the future: New lens

thousands of miniaturised transistors, while the lens is ringed with a hair-thin antenna.

Diabetics need to keep track of their glucose levels and adjust their diet or insulin dose to prevent dangerous complications.

With the smart contact lens, regular glucose readings would be transmitted wirelessly to a

handheld device. The company said: 'Uncontrolled blood sugar puts people at risk for a range of dangerous complications, including damage to the eyes, kidneys and heart.'

Lead researcher Brian Otis said shrinking the parts was a major task. He said 'We're testing prototypes that can generate a reading once per second.'

'We're also investigating the potential for this to serve as an early warning for the wearer, so we're exploring integrating tiny LED lights that could light up to indicate that glucose levels have crossed above or below certain thresholds.'

One of the key tests is to establish if the amount of glucose detected in tears is proportional to the amount of glucose in blood, and if levels remain stable when the patient becomes emotional or reacts to chopping onions.



Wrecked: The Captayannis on a 1973 trip to Greenock, and, right, her hulk



by **John MacLeod**

SHE has lain in the mid-Firth mud, a vast and reproachful hulk, for 40 years. She is a prominent (and even rather cherished) landmark; no one has ever been able to remove her – because no one ever admitted to owning her. And she's now not only a wildlife haven but a summer destination for intrepid picnic parties with little boats.

She is the wreck of the Greek merchantman Captayannis, firmly embedded – since her sad end four decades ago – on a sandbank between Greenock and Helensburgh.

But everyone just cheerfully calls her the 'Sugar Boat' – the most visible monument to a succession of maritime mishaps, calamities and tragedies in the inexorable waters of the upper Firth of Clyde.

She was the most public casualty of an appalling storm that hit the West Coast of Scotland on January 27, 1974 – in the last, embattled weeks of the Heath administration, amid a renewed and bitter miners' strike, power cuts, the three-day week and rampant inflation.

The Captayannis had sailed from Portuguese East Africa – now Angola – with a vast cargo of raw sugar, to be fed into the hungry vats of the Tate & Lyle Westburn sugar refinery at Greenock.

The town had been a profitable sugar industry centre since 1765 with no fewer than 14 separate concerns by the end of Victoria's reign, only for the Tate & Lyle plant to shut up shop in 1997.

The hapless Captayannis very nearly made it, even as the gale rose to a scream off the Argyll mountains, lashing the Firth into so much whipped cream and ripping slates and chimney-pots wholesale from coastal towns.

But the entrances for the James Watt Dock and East India Harbour at Greenock are narrow and built of implacable stone.

In such conditions – a blowing hoolie – the cumbersome, 1946 vessel (broad, deep, single-screw) could not easily be berthed, and her master made the fateful decision simply to drop anchor in the 'Tail O' The Bank' channel and ride out the storm.

Captain Theodorakis Ionnis, though, had underestimated its ferocity. The wind strengthened, till his command was being hammered by 60 mile-an-hour gusts – and, slowly, inexorably, she started to drag anchor.

Too late, sensing his peril, the master rang down with the command to start her engine.

THIS was not a simple matter – no mere twist of an ignition key – and, before she could be brought to power, the drifting vessel, now quite out of control, swept perilously close to another and more securely moored leviathan, the 36,754-ton BP tanker British Light.

Though there were scarcely more than inches in it, the two vessels did not collide.

But the tanker's anchor chain – taut, iron and robust – tore into the cargo boat's plates like a hacksaw. Water rapidly flooded in... a very great deal of water.

Captain Ionnis quickly realised that the ship's pumps could not defeat the flooding – and that if the Captayannis

were not to founder in deep water with all her 30-strong crew, his only option was to run her aground – and quickly.

Unfortunately, the only suitable shoals were on the opposite side of the Firth – the beaches of the Gareloch. But with his ship stricken and wallowing, Captain Ionnis did not have the time.

He had only one chance – to ram her firmly onto, or at least into, the vast mid-Firth sandbank.

It certainly saved the lives of all aboard. It did not, by sheer mischance, save the Captayannis, which refused to sit squarely on her bottom.

Instead, wallowing in the silt, sand and gravel, she began remorselessly to heel over, as the gale roared in building triumph and billows smashed remorselessly into her stricken hull.

The upper Firth is a bonny place. The coast is dotted with pleasant (if, these days, slightly faded) resorts: Helensburgh and Kilcraggan and Kilm and Dunoon; pretty villages such as Cardross and Garelochhead.

Long sea lochs slither into the Argyll mainland under stately hills and by gracious forests. On a fine summer's day, these waters are a playground of elegant yachts, plying ferries and the much-loved paddle-steamer Waverley.

But they are waters most vulnerable to storms – especially from the south – the wind rebounding and concentrated in the most dangerous ways from those mountains and fjords.

The main shipping channels are narrow; they can be very busy; and there are besides secret things moving

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