Iconic: Tagish Lake Meteorite
Royal Ontario Museum
Ian Nicklin, Database Technician Earth Sciences

[Podcast begins with music and Iconic Objects logo, title reads: Iconic: The Must-See Treasures of the ROM]

[Fade to close up of meteorite with title: Tagish Lake Meteorite]

[Music starts; cut to animation with meteorites hurtling towards Earth as seen from space]

[Cut to black screen with animated close up of a spinning meteorite; pan down until the edge of the Earth as seen from space is visible]

***Ian Nicklin, Database Technician, Natural History*:** Tagish fell in January of 2000 *[cut to animation showing flaming meteorites falling towards the earth]* in northern *[cut to animation of meteorites streaking across the sky]* British Columbia. *[Cut to shot of Ian standing in a ROM lab]* The original meteor, as it was streaking through the sky, may have weighed as much as 200 tonnes, so it was gigantic, so it left an enormous fireball so everyone saw it.

[Cut to still photo of a plain flanked by mountains; camera pans out] ***Ian:*** Turns out Jim Brook, a fellow living up there, who has a hunting lodge, was driving back to his lodge across Tagish Lake and, lo and behold, out on the ice are all of these little black rocks. *[Cut to still photo of small black rock in the snow; camera spins slowly as it zooms in on the rock]* Showing great forethought, he didn't touch them with his hands, he picked them up with plastic bags, *[cut to panning view of a still photograph of a mountainous landscape in winter; panning shot reveals a plastic bag filled with black material]* and immediately put them in his freezer when he got back home. It's remained frozen ever since, *[cut to shot of Ian standing in a ROM lab]* and that's very important in terms of science because it may still contain frozen material from actually outer space and this would be the first time that we could actually study 4.5 billion year old ice.

[Music starts; cut to satellite map of the Great Lakes Region in North America; rapid zoom out to show the entire spinning globe]

Ian: In the spring, once the snow started to melt, a team went out and started combing the lake *[zoom in on the Rocky Mountains; Tagish Lake is labelled on the map]* looking for it and sure enough, they found lots of material.

[Cut to still photo of a blue patch of ice surrounded by snow] ***Ian:*** Most of it, because it's black, absorbed a lot of heat from the sun and it sunk into the ice, *[cut to still photo of man sawing the ice with a power tool]* so they actually cut out blocks of ice and brought the big blocks back. *[Cut to close up photo of a hole in the ice where a block has been removed]* In other cases, where there was a little melt pool, *[cut to close up still photo of a man's hands using chopsticks to remove small bits of material from a melt pool]* they used turkey basters to slurp it out. *[Cut to close up photo of black material piled onto a square of silver foil]* All in all, they collected probably about 10 kg of material, *[Cut to shot of Ian standing in a ROM lab]* and then eventually they had to call it quits and that was it, and once the ice melted, it all just sank to the bottom.

[Music plays; fade to a shot of the meteorite against a white background; the specimen spins slowly] ***Ian:*** The material that Jim collected just shortly after it fell, that has remained frozen. That's the material that the ROM acquired. *[cut to still photo of material packed into a chest freezer]* Except for the one that's on display, *[zoom in on the labelled containers in the freezer]* all of our material is still at -80C in biological freezers here.

[Cut to a shot of Ian standing in a ROM lab] ***Ian:*** The piece that is on display here is probably the only sizable piece that you are going to see on display anywhere in the world. *[Cut to zooming still photo of the surface of the meteorite]* It's very friable. You could probably crush it with your bare hands. It's got the consistency of a charcoal briquette, *[cut to close up of the surface of the specimen]* so it's really remarkable that any of it *[cut to close up of a smooth area on the surface of the specimen]* survived the passage through the atmosphere. *[Cut to shot of the meteorite]* If there are still extraterrestrial ices, *[cut to panning shot of the meteorite]* inside the frozen pieces, then we thought that they were going to evaporate and be gone. *[Cut to panning close up of the meteorite]* That's what we're hoping is that we can actually thaw some of the stuff under a controlled environment, *[cut to extreme close up of the meteorite]* extract whatever gases come off and perhaps we'll sample compounds *[meteorite begins to turn slowly]* that have been frozen since the beginning of the solar system.

[Music starts; cut to animated fly-through of an asteroid belt in space] ***Ian:*** Meteorites are inherently fascinating because they date from the beginning of the

solar system *[pans to show asteroids everywhere]*and most of them have been derived from asteroidal bodies, *[pan to show a distant star]* little tiny worlds, that formed at that time, *[cut to view of an asteroid as it flies towards the star]* 4.5 billion years ago. *[Cut to shot of the asteroid belt moving away; a yellow planets slides past]* Meteorites, they come to the Earth, it's simple dumb luck, *[the camera continues to zoom out, more and more planets fly by]* but even then, it's a long shot because most material burns up. The shooting stars you see at night, the very bright points of light, they are probably only the size of your little fingernail *[continues to zoom out until the entire solar system is visible; cut to shot of Ian in a ROM lab]* They are travelling so, so fast they burn up almost immediately. Most of the meteorites that survive hit the atmosphere at about 17km/second. *[Cut to panning animation of a celestial cloud; camera moves around then through the cloud]* That is like going from Toronto to New York in 30 seconds. At that speed, the atmosphere is like a brick wall. They'll lose 90% or more of their initial mass just transiting through the atmosphere. *[A star is visible and rapidly gets closer]* So if we're lucky, they cross the Earth's orbit, *[cut to an aninated shot of Earth as seen from space; asteroids enter the frame from the bottom]* they'll survive the atmospheric entry, and if we're lucky, *[cut to animated close up of the surface of an asteroid as it falls towards the Earth]* they don't fall into the ocean, they don't fall into the bush, *[cut to animation shot of a flaming meteorite falling towards the Earth]* they don't fall into the distant far north, *[cut to animated shot of flaming meteorite streaking across the sky]* they might be recovered as a meteorite.

[Cut to shot of Ian standing in a ROM lab] ***Ian:*** So it's long odds to find them, but they do come down every day. *[Cut to animation of a meteorite flying towards a bright star]* They a re virtually the only information we have from that distant time. *[The meteorite is spinning as it passes the star and flies towards a blue planet]* They preserve information about the conditions that were prevalent in the distant past. So they are very, very fascinating and very, very precious to us. *[atmospheric music; the meteorite continues to fly towards the planet, which becomes recognizable as Earth]*

[Screen fades to black and podcast ends]