

which had a broad patch, which apparently had been inserted on the rifle and cut to length.<sup>10</sup> The sling was not a standard rifle sling, but appeared to be a musical instrument strap or a sling from a carrying case or camera bag.<sup>11</sup> A basic purpose of a rifle sling is to enable the rifleman to steady his grip, by wrapping the arm into the sling in a prescribed manner. The sling on the rifle was too short to use in the normal way, but might have served to provide some additional steadiness.<sup>12</sup>

The rifle was identified as a 6.5-millimeter Mannlicher-Carcano Italian military rifle, Model 91/38.<sup>13</sup> This identification was initially made by comparing the rifle with standard reference works and by the markings inscribed on the rifle.<sup>14</sup> The caliber was independently determined by chambering a Mannlicher-Carcano 6.5 millimeter cartridge in the rifle for fit, and by making a sulfur cast of the inside of the rifle's barrel which was measured with a micrometer.<sup>15</sup> (The caliber of a weapon is the diameter of the interior of the barrel, measured between opposite lands. The caliber of American weapons is expressed in inches; thus a .30-caliber weapon has a barrel which is thirty one-hundredths or three-tenths of an inch in diameter. The caliber of continental European weapons is measured in millimeters. A 6.5-millimeter caliber weapon corresponds to an American .257-caliber weapon, that is, its barrel diameter is about one-fourth inch.)<sup>16</sup> The identification was later confirmed by a communication from SIFAR, the Italian Armed Forces Intelligence Service. This communication also explained the markings on the rifle, as follows: "CAL. 6.5" refers to the rifle's caliber; "MADE ITALY" refers to its origin, and was inscribed at the request of the American importer prior to shipment; "TERNI" means that the rifle was manufactured and tested by the Terni Army Plant of Terni, Italy; the number "C2766" is the serial number of the rifle, and the rifle in question is the only one of its type bearing that serial number; the numerals "1940" and "40" refer to the year of manufacture; and the other figures, numbers, and letters are principally inspector's, designer's, or manufacturer's marks.<sup>17</sup>

The Model 91/38 rifle was one of the 1891 series of Italian military rifles, incorporating features designed by Ritter von Mannlicher and M. Carcano. The series originally consisted of 6.5-millimeter caliber rifles, but Model 38 of the series, designed shortly before World War II, was a 7.35-millimeter caliber. Early in World War II, however, the Italian Government, which encountered an ammunition supply problem, began producing many of these rifles as 6.5-millimeter caliber rifles, known as the 6.5-millimeter Model 91/38.<sup>18</sup> The 91/38 has been imported into this country as surplus military equipment, has been advertised quite widely, and is now fairly common in this country.<sup>19</sup>

Like most bolt-action military rifles, the 91/38 is operated by turning up the bolt handle, drawing the bolt to the rear, pushing the bolt forward, turning down the bolt handle, and pulling the trigger. Bringing the bolt forward and turning down the bolt handle compresses the spring which drives the firing pin, and locks the bolt into

place. When the trigger is pulled, the cocked spring drives the firing pin forward and the cartridge is fired. The face of the bolt bears a lip, called the extractor, around a portion of its circumference. As the bolt is pushed forward, this lip grasps the rim of the cartridge. As the bolt is pulled back, the extractor brings the empty cartridge case with it, and as the cartridge case is being brought back, it strikes a projection in the ejection port called the ejector, which throws it out of the rifle. Meanwhile, a leaf spring beneath the clip has raised the next cartridge into loading position. When the bolt is brought forward, it pushes the fresh cartridge into the chamber. The trigger is pulled, the cartridge is fired, the bolt handle is brought up, the bolt is brought back, and the entire cycle starts again. As long as there is ammunition in the clip, one need only work the bolt and pull the trigger to fire the rifle.<sup>20</sup>

The clip itself is inserted into the rifle by drawing back the bolt, and pushing the clip in from the top. The clip holds one to six cartridges.<sup>21</sup> If six cartridges are inserted into the clip and an additional cartridge is inserted into the chamber, up to seven bullets can be fired before reloading.<sup>22</sup> When the rifle was found in the Texas School Book Depository Building it contained a clip<sup>23</sup> which bore the letters "SMI" (the manufacturer's markings) and the number "952" (possibly a part number or the manufacturer's code number).<sup>24</sup> The rifle probably was sold without a clip; however, the clip is commonly available.<sup>25</sup>

#### Rifle Cartridge and Cartridge Cases

When the rifle was found, one cartridge was in the chamber.<sup>26</sup> The cartridge was a 6.5-millimeter Mannlicher-Carcano cartridge, manufactured by the Western Cartridge Co., at East Alton, Ill. This type of cartridge is loaded with a full metal-jacketed, military type of bullet, weighing 160-161 grains. The bullet has parallel sides and a round nose. It is just under 1.2 inches long, and just over one-fourth inch in diameter.<sup>27</sup> Its velocity is approximately 2,165 feet per second.<sup>28</sup> The cartridge is very dependable; in tests runs by the FBI and the Infantry Weapons Evaluation Branch of the U.S. Army, the C2766 rifle was fired with this Western Cartridge Co. ammunition over 100 times, with no misfires. (In contrast, some of the other ammunition available on the market for this rifle is undesirable or of very poor quality).<sup>29</sup> The cartridge is readily available for purchase from mail-order houses, as well as a few gunshops; some 2 million rounds have been placed on sale in the United States.<sup>30</sup>

The presence of the cartridge in the chamber did not necessarily mean that the assassin considered firing another bullet, since he may have reloaded merely by reflex.<sup>31</sup>

Apart from the cartridge in the rifle, three expended cartridge cases were found in the southeast portion of the sixth floor of the Texas School Book Depository Building, lying between the south