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Putting Consent in Context: Military Research Subjects in Chemical Warfare Tests at Porton Down, UK

In 1945, the British researcher Kenneth Mellanby reflected on the use of soldiers and conscientious objectors in experiments he had conducted during World War II. Military subjects "nearly always," he claimed, took part in experiments "either because the sergeant-major says, 'I want three volunteers … Jones, Smith and Robinson report, etc.,' or else because he thinks that by being a volunteer he will get a cushy job for a time, and perhaps some extra leave as well."[1]

Similar pressures continued after the war as military researchers sought human subjects for various trials, including the now-notorious chemical warfare experiments at the Chemical Defence Experimental Establishment at Porton Down. The program of nerve-gas testing at Porton that commenced after World War II remains controversial, in large part because of the 1953 death of leading aircraftman Ronald Maddison from exposure to liquid sarin, a nerve agent. Under increasing pressure by former Porton volunteers, the original coroner's verdict of "misadventure" was quashed and an inquest into the death of Maddison was reopened in May 2004. Having reviewed evidence from experts, witnesses, and documents produced by Porton scientists and officials, the jury returned its verdict of unlawful killing in November.

Critics of Porton are correct to argue that Maddison and other "volunteers" there did not give the free, informed consent defined in medical ethics codes as the prerequisite to participation in experiments. But judging the ethics of human experiments against norms of medical-ethics guidelines and

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codes disregards the differences between *ethics in theory* and *ethics in practice*. We need to understand better how researchers at specific sites defined volunteers in human experiments. At Porton, consent was not a simple yes/no question, but a tangled set of concerns that evolved over time.

RESEARCH ETHICS IN THE UNITED KINGDOM

The history of ethics in human experiments in the United States has attracted extensive scholarship. Academics and ethicists, notably George Annas and Michael Grodin, Ruth Faden and Tom Beauchamp, Jay Katz, Susan Lederer, Alan Hornblum, and Jonathan Moreno, have pronounced institutions guilty of unethical experiments.[2] Furthermore, the investigation commissioned by President Bill Clinton, published as the *Final Report of the Advisory Committee on Radiation Experiments* in 1996, provided an insightful account of the U.S. history of ethics of human experimentation.[3] In comparison, scholars in the United Kingdom have been somewhat slow to engage with this subject in the context of both research policies and practices and institutional histories of facilities engaged in the use of human subjects.[4]

Literature that examines the British context tends to replicate the approaches of U.S. academics by emphasizing the Nuremberg Code of 1947. Constructed by Allied medical experts during the trial of Nazi doctors at Nuremberg, the Nuremberg Code consisted of ten points that the experts asserted were the medical-ethics standards of the day. The first point set out the principle of "voluntary consent" as the prerequisite of any human experiment. Only those with "legal capacity to give consent" could do so and it clearly stated that consent was valid only if it was obtained without pressure after the subject had been given "sufficient knowledge" of the procedure to be able to make an "enlightened decision."[5] Paul Weindling has examined the role of informed consent prior to and during the Nuremberg Doctors' Trial.[6] He has also highlighted the involvement of the British medical profession in the Nuremberg Trials, which had been viewed as particularly U.S. dominated, and has drawn attention to the fears of the British medical profession that the Nuremberg proceedings threatened their autonomy.[7] Following Weindling's work, Ulf Schmidt has produced a detailed biography of one of the medical experts at Nuremberg, Leo Alexander, and his involvement in the construction of the Code.[8]

Others, however, have downplayed the importance of the code for postwar research. Jenny Hazelgrove's article "The Old Faith and the New Science"

was the first concerted attempt to examine the impact and meaning of the Nuremberg Code, in particular its principle of informed consent, for British medical science in the postwar period. She found that the Nuremberg Code was "largely disregarded" by researchers who clung to their "traditional paternalistic obligations and assumptions."[9] "If physicians considered it at all," she concluded, "they regarded [the Nuremberg Code] as a 'code for barbarians,' not intended for legitimate research."[10] As Weindling had noted of British researchers' reactions to Nuremberg, Hazelgrove similarly concluded that in the postwar period, the Nuremberg Code did not replace researchers' insistence on control over human experiments.

Despite such findings, scholars still present the code as an ideal that *should* have informed all subsequent research. Schmidt has claimed that the Nuremberg Code, "in lucid and unambiguous language," preserved the "rights and integrity of the research subjects."[11] He argued that later guidelines, such as the 1964 declaration of Helsinki, "watered down" the stringent safeguards embodied in the Nuremberg Code.[12] However, it can equally be argued that the Code was contextually and temporally relevant only for the specific purpose of the Nazi doctors' trial. In particular, the Code failed to differentiate between therapeutic and nontherapeutic experiments and made no reference to doctor-patient relationships. These were issues that had to be grappled with in postwar discussions of guidance on human experiments.[13] Therefore, the relevance of the Nuremberg Code in the context of post–World War II human subject research is highly contested.

One question is whether the keystone of the code—informed consent—was as well established prior to World War II as the code's authors suggested. True, consent was recognized by English law as far back as 1830.[14] And by 1933, the Treasury solicitor, whose role it was to give legal advice to government departments and government-funded bodies, held that, as a legal matter, consent was the medical researcher's only responsibility to the subject. Provided consent had been obtained, the subject was made aware of the risks and the researcher was competent to carry out the experiment, then any civil or criminal liability would be "negligible." This advice was consistently relayed to enquiring researchers during the 1940s and 1950s.[15] But the legal position of consent had little influence over consent in practice at the Medical Research Council (MRC), the leading public funding body for medical research in the United Kingdom. Doctors and researchers considered it their role to assist with subjects' and patients' decision making, in light of the technical knowledge required to truly understand procedures, and as such consent was largely regarded as a formality with little emphasis on

"informed."[16] Such case studies as are available suggest that this attitude was shared by the medical profession as a whole.[17]

Military experiments on service personnel raise a second question: Do the special circumstances of war permit an altered interpretation of research ethics? In their survey of "Informed Consent in Medical Research" in the United States and United Kingdom, the physicians John Grimley Evans and Peter Beck use an example of World War II scurvy experiments at the Sorby Research Institute in Sheffield.[18] Between 1942 and 1946, conscientious objectors were placed on varying degrees of vitamin C deficient diets. In 1945, one subject collapsed nineteen hours after performing an "exercise tolerance test" due to, in all probability, bleeding in or around the heart.[19] Another complained of chest pains and was given an electrocardiograph (ECG), which "indicated heart block."[20] Grimley Evans and Beck argue that this example highlights how "some things otherwise proscribed are permissible in wartime."[21] Furthermore, they claim that "wartime ethics" continued to permeate attitudes to human experiments right up to 1970. This would suggest that military research on human subjects operated in a distinctly different culture to civil research centers and the rules were not the same.

Historians of UK military research ethics fall into two camps: those who measure military experiments against the Nuremberg Code to pronounce them ethical or unethical, and those who, like Grimley Evans and Beck, argue that the urgency of war and the enemy threat altered the ethical precepts.[22] The former scientific staff member, now "advisor on historical matters," Gradon Carter, is among the latter. He stresses the "utility" of recruiting volunteers for tests at Porton as "immense" and considers that the "ethical standards of yesteryear" at Porton were dictated by "the contingencies of the Second World War or the Cold War."[23] The danger is that the field of the history of research ethics will become polarized by these approaches unless we move away from "accusatory history" that merely analyzes practices as ethical or unethical or in contravention of supposed ethical norms embodied, in particular, in the Nuremberg Code.[24]

Instead, we need to understand ethics, and particularly consent, *in practice*. Prescriptive definitions of consent and volunteers as ethical norms inscribed in ethics codes distort the historical perspective of how volunteering was actually perceived and represented. This article draws on a detailed empirical analysis that was conducted into the policies, procedures, and practices at Porton. It will demonstrate that the principle of informed consent conflicted with the nature of research governed by the Official Secrets Act. Moreover, no one at Porton expected volunteers to be fully informed consenting participants.

But while practices at Porton deviated from the ideal of the Nuremberg Code, it is too simple just to label them as unethical (or ethical) on that basis, since the precepts of that, or any code, must always be interpreted and adapted to circumstances. As they tried to reconcile the search for medical and military knowledge with their ethical obligations to experimental subjects, scientists at Porton and elsewhere wrestled with such questions as what is informed consent, what is coercion, and whether the same conditions presented different ethical outcomes depending on the personality of the subject.

Rather than making an ethical judgment on the use of military personnel as human subjects, this article sets out to explain the context in which these experiments took place. In doing so, we can better understand that the interpretation of research ethics in practice were contextually specific to their time and place.

BRITISH MILITARY CULTURE AND THE SERVICE VOLUNTEER AT PORTON DOWN

Hidden within six thousand acres of Wiltshire countryside in the southwest of England, reflecting its nature as a top-secret research institution, Porton Camp was founded in 1916. By the end of World War II, it was functioning in two distinct areas: chemical and biological warfare research. The Biological Department, Porton (BDP) was established within the Chemical Defence Experimental Station (CDES) during the war, and after the war they occupied separate buildings. The chemical warfare establishment at Porton underwent various name changes, but from 1948 to 1970 it was known as the Chemical Defence Experimental Establishment (CDEE).[25] As a state-funded facility under the general direction of the Ministry of Supply and then the Ministry of Defence, Porton was concerned with developing, testing, and protecting against chemical warfare. The programs of research undertaken by Porton scientists reflected external threats. Thus the 1950s were dominated by the testing of nerve agents following the Soviet capture of German nerve-gas plants during World War II, while the 1960s brought about increased interest in hallucinogenic chemicals as agents of warfare as Cold War hostilities deepened.[26]

While such concerns shaped Porton's general research program, the secrecy surrounding that work meant that not everyone was privy to the same information. Secrecy interfered with both the "coherence of any policies" and the planning of research programs.[27] With a mixture of civilian and military staff, the hierarchy within Porton itself was similarly complex. The most

senior position of "chief superintendent" was in use from 1942 to 1956, changing to "director" from 1956 until 1984.[28] The chief superintendent was a nonscientist, military position until 1948, but from then on it was a role filled by civilian scientists. It is interesting to note that the section of Porton that was most likely to come into close contact with service volunteers, the Physiology Section (which became part of the Medical Division in the 1950s), was primarily headed by military officers.

It is estimated that more than twenty thousand men and women have served as "volunteers" at Porton under the "Service Volunteer Observer Scheme," although in the period under study here women were not permitted to attend Porton as volunteers.[29] All service volunteers or observers, as they were referred to by Porton, were recruited through the armed services. Until 1963, both regulars and conscripted "national servicemen" attended Porton for chemical warfare tests. Although they were governed by the same formal discipline, some tension existed between the two groups. The hierarchical structure of the armed forces with noncommissioned officers, officers, and other ranks added another layer of tension. Regular officers felt threatened by better-educated conscripts, who often regarded their military superiors as "intellectually inferior."[30] Despite their perceived differences, all service personnel were subjected to the same basic training, strict discipline, and conformity with the expectation of obedience to authority.

Sociologists picture power and authority in a circular relationship whereby a person with authority is automatically conferred with power because of his or her status; authority is further augmented when it reinforces commonly held values of a group or society in general.[31] Military obedience conforms to this interpretation of authority through regimentation, hierarchical command, and the giving of orders, which reinforce the social values of the military as well as the organizational duties. Through military indoctrination, service personnel are conditioned to obey orders and conform to the norms of military conduct.[32] As an organization, the military represents a "nomic community," creating and sustaining its own norms and mechanisms that uphold the military ethos.[33] In addition, all service personnel subject to military law who failed to obey a "lawful command (by whatever means communicated to him)" were liable to incur punishment and potentially a prison sentence.[34]

Basic training conditioned new recruits to obey orders by stripping away individuality and replacing it with group functioning. For example, officers punished whole units for the failure of one person to comply with an order.[35] Described as "the cardinal military virtue," loyalty to one's comrades has been

acknowledged as extremely important in the cohesion of military units for centuries.[36] Whether termed fellowship, solidarity, or camaraderie, the bonds created among service personnel helped to make them into a cohesive fighting force, despite their often very different backgrounds.[37] This complex structure of military authority, which worked both formally and informally, as well as the specific organizational structure of Porton itself, contributed to the construction of the service volunteer.

THE USE OF MILITARY PERSONNEL AS HUMAN SUBJECTS

Until May 1953, Porton carried out numerous chemical warfare tests without external interference. Then Airman Maddison died from nerve-gas poisoning and further nerve-gas tests were suspended pending investigation. In December, Sir George Wilfred Turner, the Permanent Undersecretary of State for War, gave permission for the continuance of nerve-gas tests but raised concerns regarding volunteer recruitment.[38] He claimed that using servicemen was unpopular with the general public, who "dislike the idea," so he proposed that consideration should be given to using nonmilitary subjects. Furthermore, in his view the public was not "comforted by assurances" that servicemen were volunteers, and he asserted that recruitment literature should be worded so as to make it "abundantly clear that the volunteering must be genuine." In light of Maddison's death, Turner was no doubt erring on the side of caution, while at the same time acknowledging that there was a lack of transparency regarding the role of volunteers at Porton.

Porton was not directly involved in the recruitment process, which was carried out through published notices to military units, but it was responsible for devising recruitment literature. One question regarding the recruitment material concerned the amount of information given to prospective volunteers. For their part, Porton officials feared that too much information would frighten away potential subjects. In 1961, Porton director Eric Haddon explained his thinking in a detailed letter to the Ministry of Supply, at a point when he was considering adding civilian volunteers to the subject pool.[39] To emphasize the delicacy of recruiting volunteers—civilian or military—he provided a comparison of the descriptions of tests at Porton given by each branch of the armed services along with suggestions of how these might be adapted for civilian volunteers. The comparison showed that the wording of proposed tests at Porton was different in each of the services. The Army described the tests as "carefully planned and are arranged so as to eliminate all foreseeable danger . . . any physical discomfort which may result from

them is usually very slight." It also alluded to the benefit for the individual, who would be permitted ample leisure time and freedom from military routine. The Navy version was less detailed, stating that "the tests are carefully planned and are carried out under medical supervision." It went on to outline the potential amount of extra pay that could be earned, which "on average" was 40 shillings a week, and the freedom from military duties. The Royal Air Force (RAF) asserted that tests "provide important information that is of benefit not only to the services but to the nation … carried out under expert medical supervision and any physical discomfort which may result from them is very slight."

Despite these differences, none of the documents was particularly rich in detail. In a separate "comment" column, Haddon noted that "experience has shewn that detailed description tends to deter the Serviceman and so now very little is said." Although the need for secrecy limited the amount of information that could be imparted, it appeared that this was not the primary issue in the level of prior information given to potential volunteers. Rather, Haddon believed that the wording of any recruitment material—whether directed at a civilian population or used for recruiting from the military—needed to be "carefully phrased" with "fewer details the better" to avoid attention from the press.[40]

Though Haddon and others eventually decided not to use civilians in tests at Porton, they continued to recruit military subjects with as little information as possible. In January 1962, Porton's service experimental and medical officers discussed the use of War Office administrative instructions to recruit volunteers. These instructions, also known as "written orders," were circulated to military units for display on bulletin boards. During this meeting, it was agreed that administrative instructions issued by the War Office to units in 1960–61 were "unfortunate as [they] probably deterred some potential volunteers."[41] Porton staff was concerned that references to "physical discomfort" and "foreseeable danger" were having a negative effect on the number of volunteers. They resolved to remove such references from subsequent written orders to improve recruitment numbers. Only a year after the permanent undersecretary suggested more transparency in outlining recruitment for Porton, officials chose obscurity.

A second question was that of inducement. The service experimental and medical officers noted that volunteers were being paid the same rate of two shillings per test that was decided upon in 1955. This had been increased from one shilling after an appeal to the Treasury from the Air Ministry that such a small amount was "not such of an inducement to undergo these rather grim

experiences."[42] While two shillings was scarcely enough to pay for a pint of beer, volunteers usually underwent more than one test and in 1960 the Permanent Secretary of State for War noted that payments to volunteers were applied "generously." Payment was given for each individual test a serviceman undertook with the prospect of up to £2 extra pay over the course of attachment to Porton, which was usually a two-week period.[43] To a National Serviceman who, in 1962, was only paid £1.18s. 6d per week, a stay at Porton that would almost double his income was, on the face of it, an attractive proposition and certainly an inducement.[44] In light of the permanent secretary's views, increasing payments made to volunteers was not an option for the service experimental and medical officers. But Porton, the armed services, and the government all accepted that inducements were necessary for Porton volunteers. Away from Porton, however, military officials acknowledged that inducement affected the status of the "volunteer." The Army Medical Directorate developed policy on the use of military subjects in tests that made specific reference to inducement.

Both the Army Medical Services and its Directorate and the Directorate of Personal Services were under the direction of the Department of the Adjutant-General within the War Office. This War Office branch was responsible for personnel, recruiting, discipline, army organization, and medical services. The Army Medical Directorate's policy required volunteers in "Category I," whose skin was pricked for blood samples and who were given "harmless liquids," merely to have their participation as a "true volunteer" affirmed by their commanding officer.[45] But soldiers in "Category II," who were subject to vein puncture, could be requested to sign consent forms along with affirmation that they were "true volunteers." The Army Medical Directorate clearly stated, however, that volunteers should not be asked to affirm that they had received no inducement to participate. The issue of inducement had to be carefully handled, as it was noted that "an inducement is offered to 'observers' at CDEE, Porton." Clearly, the payments made to Porton volunteers caused difficulties for the development of the Army Medical Directorate's policy, which did not advocate the use of inducements in experiments on military subjects.

The propriety of inducement remained doubtful. In March 1960, the Army Medical Services' director of pathology expanded on the issue. In defining "the conditions of acceptance" of a Serviceman as a volunteer for an experiment, he stated: "If a man is not a volunteer but is under orders, or is a volunteer after threat or inducement, the responsibility for compensating the individual in the event of a mishap would fall on the officer or other person in authority giving such an order, threat or promise and not on the State."[46]

The Army Medical Directorate's policy to obtain affirmation that volunteers were "true" ensured that any injury, illness, or death claim from a volunteer or their family would be accepted by the Ministry for Pensions and National Insurance. Proof that a volunteer was "true" accorded with the general advice of the Treasury solicitor, who asserted that any civil or criminal liability was "negligible" provided that consent was obtained.[47] But could payments made to Porton volunteers invalidate claims to the Ministry for Pensions and National Insurance?

In December 1960, the permanent secretary said no. Despite the two shillings, participation in tests by Porton volunteers would be classed as "attributable to service" and any valid claim would be met by the Ministry of Pensions and National Insurance.[48] Therefore, the financial inducements given to Porton volunteers were officially sanctioned, despite the fact that it conflicted with Army policy on the use of military subjects in experiments. Porton also clashed with the Army Medical Directorate over the use of indemnity certificates or consent forms.

Within the Army, the Directorate of Personal Services was clear that indemnity certificates were "to ensure, as far as we could, that a soldier who volunteers to undergo an experiment is not only a true volunteer but could be shown, should the necessity arise, to have been a true volunteer."[49] The exchanges between the various directorates concerned with army medical policy revealed that volunteering in a military sense had different meanings and a military participant in an experiment could be either a "true volunteer" or "a volunteer after threat or inducement." The Army wanted indemnity certificates, or consent forms, to ensure that if an observer were harmed, or even killed, by a test, it would be a matter for the Ministry of Pensions, not the Army.

By 1967, a clear policy on the use of Army personnel in experiments had emerged. Soldiers could only be used as subjects in experiments of direct benefit to the armed services if it did not interfere with their ability to perform their military duties. Furthermore, it was required that they "each sign a certificate that he takes part of his own free will and without inducement, threat or fear of punishment."[50] The Deputy Director General of Army Medical Services conceded that the signing of indemnity certificates could cause volunteers "to interpret its implications in exactly the opposite sense," resulting in them believing that they were absolving the State from responsibility or that the risks were much greater.[51] However, he remained resolute that when the "true reason" was explained, it would not deter potential volunteers from taking part.

In practice, Porton researchers found that the use of indemnity certificates had a negative effect on their volunteers. In the past, "the requirement to sign a certificate," claimed a Porton service medical officer, "had prejudiced the number of volunteers."[52] The Director General of Science and Research at the War Office also pointed out that circulating printed descriptions of tests accompanied by verbal explanations was a breach in security.[53] So it appears that indemnity certificates, or "blood chits" as one Ministry of Defence official called them, were not used at Porton.[54] Even when other branches of the military were endorsing their use as a matter of policy to safeguard their researchers and department against civil or criminal liability, Porton appeared to have an unofficial policy of not using consent forms and guarding against giving too much prior information to potential volunteers on the nature of the tests. Although the Army Medical Directorate had developed clear policy on the use of military personnel in human experiments by 1967, Porton did not follow in its footsteps. Determined to recruit subjects, Porton instead began to study the psychology of servicemen who attended Porton. This turned "the volunteer" into a research subject in its own right.

PERSUADING THE "ILL-DISPOSED": VOLUNTEER STUDIES AT PORTON

In 1956, at the eleventh conference under the Tripartite Agreement (1947) between the United Kingdom, the United States, and Canada to share "toxicological" research, the three countries agreed on their need for "innocuous" chemical warfare agents: substances that would incapacitate but not kill.[55] As part of this effort, Porton commenced research into mind-altering substances as incapacitating agents of warfare. In 1959, it was decided at a meeting of Porton's Chemistry Committee that initially tests would be carried out on the mode of action and effects of LSD.[56] At the time, LSD was increasingly being used as a therapeutic drug in the treatment of mental ill-health. The leading proponent of LSD therapy, Sidney Cohen, claimed in 1960 that "hallucinogenic drugs … are safe when given to a selected healthy group."[57]

Hoping to test the drug only on volunteers of normal mentality, Porton scientists looked for an exceptional pool of subjects. In 1960, Surgeon Commander W. A. Burnett informed Porton's Biology Committee that screening measures for tests on service personnel had been devised in consultation with the Director of Army Psychology and psychiatrists of the Royal Victoria Hospital, Netley.[58] These measures involved assessing volunteers' personality, intelligence, and personal history using the Maudsley Personality Inventory,

Raven's Progressive Matrix test, and "interrogation of subject by medical officer." Burnett asserted that these screening measures would ensure that only volunteers of "apparently normal mentality" were used for LSD experiments.

At first, the screening was so strict that only 20 percent of volunteers recruited were deemed to be psychologically suitable for experiments with hallucinogenic drugs.[59] By 1967, however, around 50 percent of Porton volunteers were accepted for such tests. The reason for this, as explained by Porton's medical superintendent William Ladell, was that with their "increasing experience borderline cases could now be accepted."[60] But psychological testing could be used for more than gauging suitability for psychotropic experiments; Porton staff believed they could also identify subjects who corresponded to an ideal volunteer "type" and help reverse the decline in the number of volunteers.[61] These studies were highly revealing as they conveyed how volunteers were recruited, how they were perceived by the institution, and the types of volunteers that attended. Therefore, they built upon the categorization of "true volunteer" and "volunteer after threat or inducement" suggested by the Directorate of Personal Services in the development of the Army Medical Directorate's policy.

The first study was conducted by Roy Shephard, a physiologist who had previously been an RAF medical officer but from 1958 was working for CDEE, Porton, initially as a senior scientific officer and then as the principal scientific officer.[62] In December 1960, he produced a paper of his research findings entitled "The 'volunteer' personality: Responses to a modified Cornell medical index health questionnaire."[63] The purpose of this study was to determine whether "the subjects used represented a normal cross-section of the population." Questions were deliberately included to test "possible motives" for volunteering with the overall aim of the study to ascertain whether a "volunteer personality" could be determined that would assist with the future selection of potential volunteers. The participants were 117 men who volunteered for "experimental duty" at Porton between November 23, 1959, and February 3, 1960. In addition, Shephard studied a control group of 63 noncommissioned officers (NCOs) from the Nuclear, Biological, and Chemical Warfare Training School at Winterbourne Gunner. The Porton volunteers were between eighteen and twenty-four years old, with an average age of twenty-two, and a mix of regulars and national servicemen from all three services. The NCOs were mostly in the thirty- to forty-nine-year range, consisting of two Marines, fourteen from the RAF and the remainder from the Army.

The specific questions designed to explore motivations produced clear differences between the responses of volunteers and the control group of NCOs. Over half of the volunteer group agreed that they were "bored with normal work," but less than 25 percent of NCOs agreed. When asked if they "longed for a more adventurous life," 60.8 percent of the volunteer group agreed, compared with 49.1 percent among the NCOs. The control group agreed more strongly with the question, "Do you like to stand out from amongst your fellows?" which found 59.6 percent in agreement compared to only 33.9 percent among the volunteers. Only the questions "Do you like new experiences?" and "Are you particularly short of money at the moment?" failed to divide the two groups since neither the volunteers nor the NCOs were found to be particularly motivated by new experiences or lack of money. However, it was considered that there was "an above average proportion of 'neurotic' personalities" who were and would be keen to attend Porton "for the glory of 'secret tests,'" but that, equally, so too would "the conscientious individual anxious to serve his country." The questions not only revealed the volunteers' responses, they also reflected what Porton considered to be the main reasons for attending. Indeed, some of the results verified Porton's existing beliefs about the motivations of service personnel.

In discussing his research findings, Shephard noted that the control group of NCOs had been selected to attend Winterbourne Gunner by their commanding officers (COs) "for a variety of motives." He considered that "similar factors of selection may also have limited the number of 'volunteers' actually reaching Porton." This remark suggests that there was a parallel between NCOs who were "selected," and therefore ordered or volunteered, and service personnel who attended Porton. Moreover, the somewhat telling use of quotation marks around the word volunteer implied that Shephard considered it not to be an accurate label for those who were selected by their COs to go to Porton. In 1959, government ministers' representatives were assured by Porton that all volunteers who attended were "genuine," but Shephard suggested that this was not wholly true.[64] Therefore, the category of "volunteered volunteer," through the act by COs of selecting military personnel, is added to the classifications of "volunteer after threat or inducement" and a "true volunteer."[65] And even those who did appear to volunteer to be there attended because they were bored with service life. This means that although their consent was seemingly freely given, it was not value-free but subject to influences specific to military life. The finding that volunteers were likely to act according to the group behavior rather than stand out from everyone else was significant because the function of military training

was to strip away individual identity and condition men to function as a unit.

A second study went beyond Shepherd's effort, which had been confined only to "yes" or "no" answers to specific questions. Kenneth Herbert Kemp, an anthropologist who worked at Porton, used the Maudsley Personality Inventory and Raven's Progressive Matrices intelligence test that were part of the screening measures to inform upon his research into the volunteer type.[66] In addition, the study included an investigation into the men's motivations for volunteering and how they had heard about Porton. Between August 1960 and November 1961, 471 servicemen, of whom 32 had previously attended, were asked to complete the MPI and RPM in groups. From December 1960 onward, 379 of the service volunteers were also interviewed to find out their reasons for attending. The average age of the volunteers was twenty-two, with a range between eighteen and forty-seven, and only 22 men were over the age of thirty. They were all "nominally fit" and none of them held a commission.

The completion of personality and intelligence questionnaires and the interviews on motivation to attend were considered "subsidiary to the main experimental programme," which meant that group assessments were conducted as the most expedient method. The purpose of the study was to compare and contrast the service volunteer with other volunteers, with the general public, and with nonvolunteer service personnel. It also sought to compare intelligence and personality of the group and identify "any sub-groups which might be responsible" for the differences. Finally, the study examined how volunteers came to attend Porton and why, which then could be compared with the results of the tests "so that the recruitment of 'normal' subjects may be facilitated." This provided an important account of volunteers at Porton that raises a number of important points for understanding consent and volunteering in a military setting.

After completing personality and intelligence tests, volunteers were questioned about their motivations for attending Porton and how they came to be there. Interviews were carried out "informally" by the Sick Berth Petty Officer (SBPO), who asked why they attended and how they had heard of Porton, with assurances given that whatever their answers there would be "no 'come-back.'" According to Kemp, the volunteers' responses, despite some "facetious" comments, were given without prompt or requests for clarity to vague answers. The reason for this was to avoid volunteers giving answers that they thought were "acceptable to authority" rather than "'true' answers." Obviously Kemp was aware that military authority could influence the actions and responses of the servicemen. The quotation marks around the word

"true" suggest that even the truthfulness of true answers was in question. Even so, Kemp stated that "rapport between the SBPO and the volunteers was generally excellent" and he felt that there were "no grounds for not accepting the responses at face value." Despite the claim that the interviews of 379 men were reportedly conducted "informally," it is hard to see how anything informal could take place between the men and the officer, a member of Porton's staff. Even Kemp doubted some of the responses enough to dismiss them, though he did not dwell on the reasons for those answers.

Speculating on the particularly high number of noncommissioned officers in the volunteer group, Kemp suggested that this could have been the result of "good conduct and service" for which permission was granted to attend Porton. Kemp also observed that "interest and curiosity" was a strong motivation for attending. For the most part, Kemp emphasized findings that reinforced his own preconceived ideas of what motivated volunteers. However, he did observe "from conversations with subjects" that "generally, little encouragement was given to men to volunteer and at times steps might even [have been] taken to dissuade them."

Kemp downplayed less savory influences. He conceded that money may "have strongly reinforced their primary reasons for volunteering," but argued that other factors were more important. He dismissed the claims of two men that they were ordered to attend Porton, suggesting that the alleged orders had been "deliberately misinterpreted by the men." Moreover, he claimed, they were given "every opportunity to withdraw . . . and still volunteered to stay." Kemp also shrugged off the "odd, but apparently true" claims by two other men that they "came by 'mistake' believing that they were going to the Common Cold Research Unit in Salisbury." This facility, close to Porton, had been set up in 1946 to investigate the transmission of colds using the general public as volunteers. While Evans suggests that unit officers could have deliberately misled men into believing they were attending the Common Cold Unit, it is also possible that the two men agreed to participate in the Porton tests even when they realized they were not taking part in common-cold tests.[67] Either way, it is clear that there was some confusion over the nature of Porton as a chemical warfare testing and research facility.

Most of the responses suggest that the men at Porton were neither dupes nor individuals motivated solely by self-interest or patriotism, but rather servicemen who responded to indirect orders and group pressure. In regarding these men as true volunteers, Kemp failed to consider the influence of group behavior and peer pressure among trained service personnel. The act of withdrawing could be seen as a weakness on the individual's part or a failure to

support his fellow servicemen, and therefore the decision to withdraw would be influenced by notions of solidarity and esprit de corps. Taken together, the studies conducted between 1959 and 1966 failed to indicate particular traits and characteristics common among those who could be predisposed to volunteer. What they did do was demonstrate a lack of clear information given to volunteers regarding the work of Porton and some confusion over how service personnel came to attend.

In 1967, Porton sought to address these issues in a recruitment film, *Volunteers for Porton,* which was produced by the Army Kinema Corporation in conjunction with Porton's Photographic Section. The film deliberately appealed to the "conscientious individual anxious to serve his country" that Shephard identified. It opened with powerful images of women and children donning gas masks and scenes from the trenches of World War I. The emotive war images emphasized the necessity of Porton's work both for the armed services and the humanitarian protection of the nation. Moreover, it spoke to the audience's sense of camaraderie by presenting the work of Porton as serving Britain's collective benefit.

At the same time, the film presented more direct benefits to the volunteers. One scene featured a naked woman shielded only by a shower curtain, along with the disclaimer that "unfortunately" women were not allowed to attend. Other scenes showed leisure facilities at Porton and in the town of Salisbury, emphasizing that there would be little time for boredom and the incentive of extra pay at the end.

The film also addressed issues of consent. Servicemen were filmed looking at bulletin boards that displayed Defence Council Instructions, the written method used by Porton for recruiting volunteers, which made it clear what the notices were for and that volunteers had "the right to withdraw at any time." This aspect related to Kemp's study, which betrayed some confusion about how volunteers were recruited, and it appears that the film was attempting to set the record straight. Yet the film also requested that volunteers "don't talk to your pals or civilians about anything you have seen or heard about during your time here," which was perhaps added for those who were believed to attend "for the glory of secret tests."

The film ended with the following remarks: "The volunteer should return to his unit not only better off financially but also in the sure knowledge that by his work has made a definite, personal contribution to the defence of his country and the advancement of science." Participation in tests was compared to military service as part of defending the nation. The use of military values to persuade potential volunteers was a deliberate measure, conceived out of

the volunteer studies. However, this acknowledgment of the influence of military indoctrination was curiously disregarded in other parts of the film. For example, when asked if they had any complaints regarding their treatment as volunteers at Porton, all of the men being filmed looked somewhat bemused, if not amused, at this remark by a military officer.

Service personnel were conditioned to obey orders and not to challenge authority. Complaints by volunteers about their treatment therefore would normally amount to insubordination, a disciplinary offence. This raises questions as to the reality of the situation given the status of servicemen. The footage of an officer asking if the volunteers had any complaints was possibly included to demonstrate that there was no cause for concern with volunteering for Porton. But real soldiers would have understood the futility of such a scene. Perhaps the filmmakers knew this and included the scene as a wink to their audience.

On the face of it, the film appeared to be a step toward more transparency in the work of Porton and the role of volunteers. However, as with most advertisements, the film was not a "true" representation of volunteering for Porton, for it omitted the most important piece of information needed by prospective volunteers: the nature of the research being conducted. Viewers had no way to learn that Porton's main work at the time was research into hallucinogenic drugs.

Most of all then, the film showed that in 1967, Cold War secrecy still outweighed informed consent. Without a firm policy on the ethics of human experiments at Porton, the research needs of the establishment were the overriding priority. Measures to increase the number of volunteers did not take into account ethical precepts embodied in medical ethics codes. When ministries asked whether volunteers were "genuine," Porton's answer that they were could not be challenged; without any external governance, Porton was largely autonomous. Its leaders were, in effect, their own experts and were able to construct their own norms in the use of human subjects. So while they did seek subjects who volunteered, they were scarcely committed to the principle of informed consent.

CONCLUSION

The service volunteer at Porton Down, who took part in chemical warfare tests, did not give informed consent as dictated by medical ethics codes. Indeed, my research has failed to find any reference to the Nuremberg Code or later guidelines among the material relating to Porton. So what conclusion

should be drawn? That Porton failed to protect its research subjects? This may well be the case, but it could equally be said of many other civil research facilities in this period. Such an approach adds little to our understanding of the place of consent in different research contexts.

What this article shows is that researchers at Porton regarded informed consent as basically inapplicable to secret military chemical warfare research. How could volunteers be informed when the research was top secret? And how could they consent when they lived in a world defined by obedience to both orders from superiors and pressure from their comrades? Faced with such facts, Porton officials embraced a more ambiguous framework, in which volunteers could be "true," "volunteers after threat or inducement," or indeed "volunteered volunteers."

In the history of human experiments, it is often only *ethics in theory* that can be traced to ethics codes as idealized creations of what should have been done but was seldom adhered to. By examining the nature of consent and the definitions of volunteers within the cultural and temporal framework, we can begin to understand that influences on *ethics in practice* came from the social, cultural, and institutional values of those engaged in the research. This conclusion gives a deeper, more nuanced representation of the history of consent, research ethics, and experiments on human subjects, which were often complex, sometimes conflicting, but always specific to the context in which they were carried out.

NOTES

1. Kenneth Mellanby, *Human Guinea Pigs* (London, 1945), 30.

2. See George Annas and Michael Grodin, eds., *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation* (New York, 1992); Ruth Faden and Tom Beauchamp, *A History and Theory of Informed Consent* (New York, 1986); Jay Katz, "Informed Consent: Must It Remain a Fairy Tale?" *Journal of Contemporary Health Law and Policy* 10 (1994): 69–91; Allen M. Hornblum, *Acres of Skin: Human Experiments at Holmesburg Prison* (New York, 1998); Jonathan Moreno, *Undue Risk: Secret State Experiments on Humans* (New York, 2001); Susan Lederer, *Subjected to Science: Human Experimentation in America Before the Second World War* (Baltimore, 1995).

3. *Final Report of the Advisory Committee on Human Radiation Experiments* (New York, 1996).

4. Jordan Goodman noted that, despite William Bynum's drawing attention to the gap in the history of human experimentation in 1988, little has been written to address this. *Useful Bodies: Humans in the Service of Medical Science in the Twentieth Century*, ed. Anthony McElligott and Lara Marks (Baltimore, 2003), 1.

5. Klaus Dörner, Aneglika Ebbinghaus, and Karsten Linne, eds., *The Nuremberg Medical Trial 1946/7* (English edition), fiche *123*, 11568. I am grateful to Ulf Schmidt for providing a copy of this document.

6. Paul Weindling, "The Origins of Informed Consent: The International Scientific Commission on Medical War Crimes, and the Nuremberg Code," *Bulletin of the History of Medicine* 75, no. 1 (2001): 37–71; Paul Weindling, *Nazi Medicine and the Nuremberg Trials: From Medical War Crimes to Informed Consent* (Basingstoke, 2006).

7. Paul Weindling, "Human Guinea Pigs and the Ethics of Experimentation: The *BMJ*'s Correspondent at the Nuremberg Medical Trial," *British Medical Journal* 313 (1996): 1467–70.

8. Ulf Schmidt, *Justice at Nuremberg: Leo Alexander and the Nazi Doctors' Trials* (Hampshire, 2004).

9. Jenny Hazelgrove, "The Old Faith and the New Science: Human Experimentation Ethics in Britain, 1946–1973," *Social History of Medicine* 15, no. 1 (2002): 110.

10. Ibid., 133.

11. Schmidt, *Justice at Nuremberg*, 4.

12. Ibid., 267.

13. See T. Bolton, "Consent and the Construction of the Volunteer: Institutional Settings of Experimental Research on Human Beings in Britain During the Cold War" (Ph.D. diss., University of Kent, 2008).

14. Ulrich Tröhler, "Human Research: From Ethos to Law, from National to International Regulations," in *Historical and Philosophical Perspectives on Biomedical Ethics: From Paternalism to Autonomy?* ed. Andreas-Holger Maehle and Johanna Geyer-Kordesch (Aldershot, 2002), 99.

15. Letter from Treasury solicitor to secretary of the MRC, 21 June 1933, TNA, FD1/428. "Human Volunteers: Experiments on Legal Position (forms and discussions), 1933–54," National Archives (TNA), FD1/428.

16. See Bolton, "Consent and the Construction of the Volunteer," chap. 2.

17. Goodman, McElligott, and Marks, *Useful Bodies*, present case studies of UK and U.S. research on human subjects.

18. John Grimley Evans and Peter Beck, "Informed Consent in Medical Research," *Clinical Medicine* 2, no. 3 (2002): 271.

19. Minutes of the vitamin C subcommittee, 4 August 1945, TNA, FD1/144.

20. Data sheets on chronology of symptoms and treatments of the vitamin C experimental subjects, TNA, FD1/145.

21. Grimley Evans and Beck, "Informed Consent in Medical Research," 271.

22. For charges of unethical work, see, in particular, Evans, *Gassed*; Ulf Schmidt, "Cold War at Porton Down: Informed Consent in Britain's Biological and Chemical Warfare Experiments," *Cambridge Quarterly of Healthcare Ethics* 15 (2006): 360–80.

23. Gradon Carter,*Chemical and Biological Defence at Porton Down, 1916–2000* (DERA, 2000), 129.

24. Goodman, McElligott, and Marks,"Making Human Bodies Useful: Historicizing Medical Experiments in the Twentieth Century," in *Useful Bodies*, ed. Goodman, McElligott, and Marks, 7.

25. Carter, *Chemical and Biological Defence*, x–xi.

26. Ministry of Defence, "Historical Survey of the Porton Down Service Volunteer Programme, 1939–1989," chap. 4, 13, www.mod.uk/Defence (accessed 2 September 2006).

27. Brian Balmer, *Britain and Biological Warfare: Expert Advice and Science Policy, 1930–1965* (Hampshire, 2001),*186*.

28. Carter, *Chemical and Biological Defence*, 70.

29. This figure is that given by Carter, *Chemical and Biological Defence*, 121. However, Evans estimates the figure to be nearer thirty thousand. See *Gassed*, 365–67.

30. Trevor Royale, *The Best Years of Their Lives* (Kent, 1988), 59, 73–74. See also David Lodge's fictionalized account of his personal experience of military service in *Ginger You're Barmy* (1961; London, 1988).

31. Nico Keijzer, *Military Obedience* (Alphen aan der Rijn, 1978), 19–20.

32. Ibid., 48.

33. Mark Osiel, *Obeying Orders: Atrocity, Military Discipline, and the Law of War* (Atlantic Highlands, N.J.), 164–65.

34. Sections 34 and 36 of the Army Act, which accorded with the Acts of the other Services, quoted in Osiel, *Obeying Orders*, 77.

35. Lodge, *Ginger You're Barmy,* 90. One National Serviceman described the "misery of 'jankers' imposed by the 'bully boys'" at training camp, quoted in Royle, *The Best Years of Their Lives*, 48.

36. Frank M. Richardson, *The Fighting Spirit: A Study of Psychological Factors in War* (London, 1978), 7–13.

37. David Morgan, *"It Will Make A Man Of You": Notes on National Service, Masculinity, and Autobiography* (Manchester, 1987), 29; Royle, *The Best Years of Their Lives*, 50.

38. Internal minutes from permanent undersecretary to Porton, 14 December 1953, TNA, WO32/20843.

39. Letter from Porton's director Eric Haddon to J. E. Gale at the Ministry of Supply, 17 August 1961, TNA, WO32/20843.

40. Ibid.

41. Porton Note No. 119, "The Service Volunteer Observer Scheme at CDEE from 1959 to 1965," 28 October 1965, TNA, WO195/16136.

42. P. L. Burton, Air Ministry, to J. C. P. Spicer, Treasury, 17 October 1955, LHC, AIR20/12171.

43. Permanent Secretary of State for War to Permanent Undersecretary, 13 December 1960, LHC, AIR20/12171.

44. T. Hickman, *The Call-Up: A History of National Services* (London, 2005), xix. See also P. Buonanno, "Long-term Effects of Conscription: Lessons from the UK" (2006), www.unibg.it/dati/bacheca/657/23064.pdf (accessed 10 September 2007).

45. "Proposal regarding army volunteers for medical investigations sponsored and controlled by the Army Medical Directorate," 1959, TNA, WO32/18677.

46. Deputy Director General, Army Medical Services, to Directorate of Personal Services, 4 March 1960, TNA, WO32/18677.

47. Letter from Treasury solicitor to secretary of the MRC, 21 June 1933, TNA, FD1/428. Human volunteers: experiments on legal position (forms and discussions), 1933–54, TNA, FD1/428.

48. Permanent Secretary of State for War to Permanent Undersecretary, 7 December 1960, LHC, AIR20/12171.

49. Loose minutes, Directorate of Personal Services to Deputy Director General, Army Medical Services, 11 March 1960, TNA, WO32/18677.

50. Internal minutes from Army Medical Services to Army Medical Directorate, 4 December 1967, TNA,WO32/18677.

51. Deputy Director General, Army Medical Services, to Directorate of Personal Services, 4 March 1960, TNA, WO32/18677.

52. Minutes of a meeting to discuss chemical tests on service volunteers at CDEE, 21 December 1959, Liddell Hart Centre for Military Archives (LHC), King's College London, Gassed Collection, DEFE7/1451.

53. Ibid.

54. Letter from J. A. Drew, MoD, to War Office, 29 November 1960, LHC, DEFE7/1451.

55. Recommendations and conclusions of the eleventh Tripartite Conference on toxicological warfare, TNA, WO195/14065.

56. Minutes of 32nd meeting of Chemistry Committee, 5 March 1959, TNA, WO195/14637.

57. Sidney Cohen, "Lysergic Acid Diethylamide: Side Effects and Complications," *Journal of Nervous and Mental Diseases* 130 (1960): 40.

58. Porton Note No. 166, "Screening Tests Prior to Administration of Psychotomimetic Drugs in Human Subjects" by Surgeon Commander W. A. Burnett, 7 September 1966, TNA, AIR 20/12171.

59. Ibid.

60. Minutes of 4th meeting of the Applied Biology Committee, 26 April 1967, WO195/16462.

61. The falling numbers were provided in table form by Col. R. P. Bradshaw in a paper titled "The Service Volunteer Observer Scheme 1959 to 1965," LHC, WO 195/16136.

62. *World Who's Who in Science*, ed. Allen G. Debus (Chicago, 1968).

63. Porton Note No. 173, 1960, TNA, WO195/15070.

64. "Notes of a meeting … to discuss nerve gas tests on human observers," September 1959 LHC, AIR 20/10719.

65. DDG to DPS, 4 March 1960, TNA, WO32/18677.

66. *Directory of British Scientists, 1964–1965* (London, 1964); Porton Technical Paper No. 857, June 1963, LHC, WO195/15638.

67. Evans, *Gassed*, 175.