amputations at the hip-joint gave a mortality of 100 per cent., and resections claimed 40.2 per cent. of deaths. Even at the knee-joint Stromeyer amputated 36 times with 36 deaths and Nussbaum 34 times with 34 deaths.[18]

The French results were naturally worse, for their armies were constantly being defeated and retreating, and, especially in the latter part of the war, they consisted largely of volunteers, while the Germans were mostly veterans of the Schleswig-Holstein and Austro-Prussian wars.

Of the Boer War (1899–1901) only two features need be noticed. First, that typhoid attacked 57,684 men and killed 8,022, while the Boers only killed 7,781. Bacteria were more deadly than bullets, as Osler has said.

Secondly, the modern missile was for the first time in general use, with the result that instead of about 15 per cent. of the wounded losing their lives, only about 8.8 per cent. died. The wounds from the new missile were much less severe and healed more quickly than ever before. The first aid packet also had come to the aid of the soldier.

The Spanish American War, surgically speaking, was of little moment, as the numbers killed and wounded were too small to make the statistics of any great value, but it is gratifying to find that only 4.6 per cent. of the wounded died.

Typhoid, however, held high carnival. It caused 86.24 per cent. of all the deaths! Happily we can say that hereafter—thanks chiefly to the anti-typhoid inoculations—there will never be another such holocaust. (*Vide* Lecture II.)

The statistics of the Russo-Japanese War also need detain us for only a moment. I shall only quote the Japanese official statistics, as given by Major Lynch, of our army.[19] There were 47,387 killed. Of 173,425 wounded 11,500 died, a mortality of 6.7 per cent. The killed and those who died of wounds numbered in all 58,887, while the deaths from disease numbered only 27,158, a remarkable showing.

The present war naturally has yielded so far very few statistics. These can only be collected and tabulated after some years of peace. So far as I can judge, I fear that, while the mortality from disease (except perhaps from typhus, especially in Serbia) will be less than in former wars, the military conditions are such that the larger number of artillery wounds, the unavoidable delay in gathering the wounded into hospitals, the apparent absence of any truce for collecting the wounded and burying the dead, and the virulent infection from the soil may result in a large mortality rate and possibly a larger percentage than in previous wars in spite of the benefits of Listerism. But were the first-aid packet and the Listerian treatment not available the mortality ratio in this present horrible war unquestionably would be far greater than that which will be recorded.

This short résumé gives us some idea of surgical conditions preceding the great revolution inaugurated by Lister to which we will next proceed.

W. W. KEEN

[18] Wrench's "Lister," p. 236.

[19] "Reports of Military Observers attached to the Armies in Manchuria during the Russo-Japanese War," Part IV., p. 399.

LADY HUGGINS

LADY MARGARET LINDSAY HUGGINS, who passed into the higher life March 24, was a personality worthy to be classed with the group of pioneer women of the last century who, under difficulties, achieved distinction in intellectual fields.

Mary Somerville was deprived of her candle when her mother found that she was secretly studying Euclid; Anna Swanwick was denied

by her father any teaching in Greek as out of all propriety for girls; Agnes Clerke when a young girl could get no one to tell her about the stars, neither could Margaret Lindsay Murray, but they all struggled against odds and reached the goal of knowledge. Lady Huggins in a letter speaking of the death of Miss Swanwick, the distinguished translator of the tragedies of Æschylus, remarked:

> It is curious to me to notice what seems an inferiority in some very important ways among the young women coming on, who have had every possible educational advantage, when I compare them with such women as Anna Swanwick, who had to struggle for her education. I think perhaps everything at present tends to be made too easy. The present generation have more knowledge, I know, and they ought to do more; will they?

Lady Huggins said she was born a lover of the stars. Before she reached her teens she worked with a little telescope making drawings of the constellations and sunspots. Later, inspired by anonymous articles in the magazine, *Good Words,* she became interested in the spectrum, and made a little spectroscope for herself by which she detected the Faunhofer lines. It was the romance of her life that she afterwards became the wife of the astronomer who wrote the papers, and with him made many discoveries with the magic instrument. The London *Times* in its notice of Lady Huggins remarks that Richard Proctor called Huggins the "Herschel of the Spectroscope" and that his wife was to him what Caroline Herschel had been to her brother, an unwearied coworker.

She took upon herself to guide the telescope for the long-exposure photographs of the spectra of stars, she developed the plates with great skill, and her husband remarked on the keenness of her eye and judgment in arranging the plates in sequences representing stellar development.

The quest for knowledge of this pair was unremitting. Their absence from a notable scientific gathering in London was once noted, when she remarked:

> Astronomy is a heartbreaking science in England. We rarely go anywhere in the evening but wait for breaks in the clouds. We discover something which seems to be a clue to further knowledge and wish to pursue it; night after night the clouds disappoint us and sometimes we have to wait a year to take up that clue again.

Lady Huggins constantly shared the excitement of her husband in the early days of astrophysics when, as he said, "every observation revealed a new fact and almost every night's work was red-lettered by some discovery." She once remarked to a visitor passing in her laboratory a tray in which a fresh print was being washed:

> There is a bomb to be thrown into the astronomers' camp. It will be harmless, but effective.

Her name appears as joint author of ten of the scientific papers of the second volume of Tulse Hill Publications, and as joint editor of all. Of the epoch-making first volume, "The Atlas of Representative Stellar Spectra," she is joint author. These two and a third volume, entitled "The Royal Society," containing the addresses delivered by Sir William as president, are superb specimens of book-making, perfect in type work, illustration and binding, and this achieved by the taste and skill of Lady Huggins.

The great delight of her vacations was to unearth strange old astronomical drawings and reproduce them in India ink for the initial letters of the chapters of her books, or to make sketches in water-colors or by etching. An appreciation in an English paper remarks:

> Lady Huggins's striking and attractive personality expressed itself in her appearance and manner. There was in her not only the conscientiousness, thoroughness and care which should be the characteristic of the scientist, but also the imagination and love of beauty which distinguish the artistic temperament.

She published a paper on an astrolabe of rare workmanship, which appealed to her not only for its astronomical association, but for its "charm," as she expressed it.

Lady Huggins was greatly interested in the educational and scientific developments in the New World and especially in the "educational justice" now given women there. Entirely on her own initiative she presented to Wellesley

College Observatory some of her personal astronomical treasures, including stained glass panels once in the Tulse Hill home. Further bequests to Wellesley College are found in her will. In a letter written in her extreme illness, stating her decision to make this gift, occurs a passage which shows her vision of what America and the students of the American colleges ought to be and do.

The first sentence refers to the superb carrying out of the fire drill, which saved so many lives in the great fire of a year ago at Wellesley, and the energy and devotion of the alumnæ which raised the three million restoration and endowment fund. She says:

> I rejoice over the splendid spirit shown by the old Wellesleyans! I believe in the real great America! I believe in Wellesley College, one of its far-seeing creations! It is to such colleges for the training of young life to create the New Heaven and New Earth to which we all look forward.

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THE UNIVERSITY OF MINNESOTA AND THE MAYO FOUNDATION

THE executive committee of the board of regents of the University of Minnesota has prepared a report in which it recommends that the university establish graduate work at Rochester, Minnesota, that such work be directed by the graduate school through its dean and the medical school graduate committee, that professors and other teachers be appointed on the nomination of the same committee, to carry on graduate teaching and research at Rochester, and that the offer of clinical and other facilities and gifts made by the Mayo Foundation be accepted.

The terms of the agreement are to be as follows:

1. The agreement is made between William J. Mayo and Charles H. Mayo as founders; the Mayo Foundation; Burt W. Eaton, George W. Granger and Harry J. Harwick, trustees of the $1,500,000; and the university. It sets forth copies of the articles of the foundation and of the two trust agreements and asserts or provides:

2. That the Mayos and their associates have entered into an agreement with the foundation for the period of six years after September 1, 1915, to pay all moneys and provide all subjects, facilities and material necessary to enable the foundation to carry out its agreement with the university.

3. That the board of regents is by law required to manage the university and appoint its professors and employees and fix their salaries and may accept in trust gifts and bequests upon the terms and conditions on which they are granted.

4. That the university is maintaining a medical school and is carrying on graduate medical and surgical instruction and has determined to increase its faculty, secure additional facilities, sites and material, appoint additional professors and assistants and carry on part of the work of the school of medicine at Rochester.

5. That the foundation gives and grants to the university free of charge the right to use for medical and surgical education and research space and rooms and equipment in a certain building in Rochester, together with all clinical and other materials and opportunities for graduate medical and surgical work available at the Mayo Clinic, St. Mary's Hospital, the Kahler Sanatorium and the Colonial Sanatorium in Rochester, for a period of six years after September 1, 1915.

6. That the foundation also agrees during that period to pay all salaries fixed by the board of regents and payable to professors, assistant professors and instructors appointed by the board.

7. That until September 1, 1921, the net income of each of the trust funds shall remain in the hands of the trustees as an added increment to the principal of the funds.

8. That from and after September 1, 1921, the principal of the funds and all accumulations to that date shall be turned over to and become the property of the university.

9. That the funds and the income therefrom are granted in trust to be used by the university as follows: (*a*) The principal shall always be kept intact by the board of regents and be