VON LÖBELL'S ANNUAL REPORTS ON THE CHANGES AND PROGRESS IN MILITARY MATTERS IN 1900.

Précis by Lieut.-Colonel E. GUNTER, p.s.c. (late East Lancashire Regt.)

PREFACE.

THE XXVII. Volume of this important military publication for 1900, here reviewed, contains 630 pages, the increase being probably due to the greater length of the historical section, which not only deals with the war in South Africa, and the rising in China against the European Allied Powers, but includes an account of the Turko-Grecian campaign of 1897. Moreover, as technical military appliances increase with the progress of discovery and invention, so must that portion of the work dealing with these also expand.

The Editor says in his preface that a desire has been expressed in some quarters to restrict Part I., which gives tables and reports of the chief European Armies, to noting the changes which have taken place in these, instead of reproducing year by year their whole organisation in tabular form, though this idea does not, it appears, meet with universal approval. The space in the JOURNAL being, however, limited, it is thought best to reduce this portion, briefly noting any important changes in the different Armies, arranged alphabetically as heretofore, so as to allow the remarks on tactical and technical progress more room.

The historical portion has been restricted for the same reason, and for those given in the body of the *précis* in brackets, where this is touched on.

A few of the military works brought to notice are mentioned in the literary section, but these are so voluminous that a separate number would be required to do them justice.

Some remarks by the Translator, which seemed in parts called for, are appended as footnotes marked with asterisks.—E. G.

PART I.

AUSTRIA-HUNGARY.

The organisation of the Austrian Army, as sketched in last year's Report, remains unchanged. The re-organisation of the Austro-Hungarian Landwehr has been proceeded with. These are apportioned

to 8 Austrian and 8 Hungarian Militia Districts, the Austrian having 1 or 2 brigades in each district, excepting that of Zára, which has 1 regiment of 4 battalions only. The Hungarian districts comprise uniformly 2 brigades each, but these are composed of 2 regiments each only, so that the Austrian Landwehr districts have 33 regiments of 108 battalions, against the Hungarian 28 regiments of 94 battalions.

The total number of battalions available in peace is 668, and of squadrons 351. There are 39 Austrian Landwehr squadrons, but no Militia artillery. The Hungarian Landwehr have no cavalry or artillery. The Landwehr are under the General Officer Commanding the Territorial District for training, discipline, etc.

Last year portions of the Austrian Landwehr were called out for 4 weeks' training, and the Hungarian for 35 days. Promotion is rather quicker in the Landwehr, subalterns obtaining their companies in about 9 to 11 years, as against 12½ in the Regulars.

The Regular artillery remains as noted in last year's Report. The whole Army is, subject to the Emperor, under the direction of the Chief of the General Staff, who is the coadjutor of the Imperial War Minister.

The War School.*—Several changes have been introduced. Candidates must have at least 3 years' service, and be not over 28 years of age. They undergo an entrance qualifying examination, in which they must show a fair proficiency in one foreign language. The establishment consists of the Permanent Staff and the attached students. A major-general of the General Staff is commandant, with 18 majors and captains of the General Staff as lecturers; 1 major and 6 captains of artillery for that branch, 1 major and 1 captain of cavalry as riding-masters. All these hold their appointments for long periods, and more than one-half cannot be changed at the same time. The course lasts two years, and 50 officers join each term. The course begins in October and terminates in June of the second year, after which, until August, practical exercises in the field have to be satisfactorily performed, in addition to the tactical staff rides in the second year, which last 6 weeks. The artillery officers have 14 days' practical siege works exercise in addition at a modern fortress. There is also a special course for engineer officers. At the end of each course certain officer students are selected for immediate appointment to the General Staff. The others rejoin their regiments until opportunities occur for employing them.

School of Musketry.—In 1900 the following courses of instruction were held at the *Brück* School of Musketry: 3 five-week courses for 100 officers (junior captains and senior lieutenants), which Landwehr and naval officers also attended; a 6-day course of lectures, etc., for 41 commanding officers, and several short courses for officers of the Hungarian Ludovic Academy, and for officer students from the War School, etc.

* This is not like the German War School, but similar to our Staff College.—
TRANSLATOR.

Manœuvres. — From 11th to 15th September, 1900, Imperial Manœuvres were held in Galicia, 2 entire Army Corps and parts of 2 others being employed, besides 3 Austrian and 1 Hungarian Landwehr Infantry Divisions.

BELGIUM.

The question of Army reform is still awaiting the complete report of the Army Committee. The war establishments of 23rd December, 1899, show a strength of 9 Infantry Divisions, no Army Corps being formed, and 2 Cavalry Divisions of 2 brigades of 2 regiments each.

The war establishment of an Infantry Division is as under:—2 brigades infantry, 1 battalion divisional infantry (carabineers), 2 squadrons divisional cavalry, 1 regiment field artillery (8 batteries); 2 infantry and 2 artillery ammunition columns, 1 field company R.E., 1 section field telegraph, 1 detachment R.E. park, 2 field hospitals, 1 hospital train, 1 transport, 1 supply column, 2 provision columns, 1 transport and supply park, and 1 movable remount dépôt.

The total war strength would be about 140,000 men, the battalions being about 1,000, and the squadrons about 160 strong; the field batteries 160 and the horse artillery 180 strong, each having 6 guns.

ENGLAND.

The Report deals in twenty-three pages with the organisation of the British Army in 1899 and its subsequent reinforcement, distinguishing carefully temporary from permanent changes; and considering the great complication that has attended these, it does the compiler great credit. That our War Minister should be styled Sir John Brodrick is natural enough. Perhaps if he is not, he ought to be.

The Report recognises that Great Britain can on emergency greatly increase its permanent forces by means of its Volunteers and Colonial troops, and that 3 Army Corps and 3 Cavalry Brigades, comprising a total of over 500,000 men, could be made available for Home Defence in 1900, though only 24,000 "A" Reservists remained over and above the large numbers in South Africa. It notices the permanent formation of Major-General Baden-Powell's South African Constabulary and goes much into detail regarding our recruiting reports, characterising that of the Inspector-General as far too rose-coloured, and says that, when the war in South Africa is over, not only will recruiting for the Line fall off, but it will be impossible to obtain the required number of men for the Militia by voluntary recruitment; still, that the patriotic behaviour of employers of labour in throwing open places to reservists and keeping open those of men called out for Active Service will bear fruit and encourage recruiting.

The Report notices the fact of the embodied services of Militia officers counting as marks towards their competitive examination for Line commissions, and that all infantry and cavalry officers must obtain a Hythe Musketry Certificate before they can be promoted. It gives a minute account of the formation of new camps of exercise and of the

measures taken for the tactical training of the troops in 1900, and gives Lord Wolseley credit for his energy and fearless criticisms. It touches on the Cyclist exercises from London to Brighton under Sir J. F. Maurice, and the issue of the "Cyclist Drill." Under the head "discipline" the Report asserts that owing to the British military prisons being all full to overcrowding, 300 soldiers had to be imprisoned in civil jails.*

The failure of the light field picks and shovels carried by our Infantry, who could make no impression on the rocky ground with them, is commented on.

FRANCE.

The organisation of the French Army remains as reported last year, but a few changes, chiefly increases of establishments by the formation of additional battalions, etc., are noted.

Though no official reports have been published, it is gathered that the French could put 5 Armies in the field, 4 on the Eastern frontier and 1 in the Alpine region. Generals Duchesne, Lucas, Kessler, Négrier, and Zédé are said to have been nominated to command these, which will consist of 4 Army Corps each (excepting the Alpine troops of 2) with General Brugère as Commander-in-Chief.

The strength of the units would be approximately as indicated in last year's Report. The Rifle Battalions of 6 Companies would have 26 officers, 1,500 men, and 40 horses. During 1900, 93 regiments (rather more than half) had their 4th Battalions raised. The 4 Zouave Regiments had raised their 5th Battalions. Two new Colonial Marine Regiments were raised, and the 2 foreign Regiments had their establishments increased, by raising an extra battalion each, so that each now consists of 6 battalions.

The re-organisation of the Artillery is not quite complete, but the abolition of the Corps Artillery is contemplated, and the formation of 4 gun mobile batteries for distribution among the Infantry Brigades of each Division.**

In the Cavalry, 20 selected intelligent, well-educated men are to be specially trained as scouts in each squadron, a proportion being distributed to each of its sections. They are to be especially well-mounted. They are distinguished by a star on the right arm.

The Colonial Troops have now all been placed under the orders of the War Minister. General de Gallifet retired from his position as War Minister after having held office barely a year, in consequence, it is said, of differences in the Cabinet. By his great energy he had already done much. To him is due the rapidity with which the new field gun has been supplied, the improvements in the rifle, many important changes in the regulations, the re-organisation of the General Staff and of the

* The writer is apparently unacquainted with our regulations under this head.—TRANSLATOR.

** It will be remembered that in 1892 Napoleon attached 12 guns to each Infantry Regiment.—TRANSLATOR.

Artillery. He was succeeded by General André, Commanding the 10th Division, originally an Artillery Officer.

Conseil supérieur de la Guerre.—In the early part of July, 1900, General Brugère, Military Governor of Paris, replaced General Jamont, who had differences with the War Minister, as Vice-President of the Council and Chief of the Staff; and Generals Duchesne, Lucas, and Kessler, who commanded Army Corps, were nominated to the Chief Council.

It is in contemplation to arm all Dragoon Regiments with the lance. A new Infantry Drill is being compiled by a Committee, presided over by General Lucas, and composed of Cavalry and Artillery as well as of Infantry officers. One company in each regiment is directed to practise the new drill.

Military Education.—New entrance examination regulations to the *École supérieure de la Guerre* (Staff College) were promulgated in 1900. The Examination consists of a preliminary and a final test, the latter in Paris. Six problems are set in the first on Tactics, Military History, Military Law, and Administration, one German Test and a Field Sketch. At the final written examination a problem was set in each of the following:—Geography, Topography, Fortification. *Viva voce* questions were given in Tactics, Organisation, and German. 23 captains and 57 lieutenants passed this examination.

The École spéciale Militaire.—During the first year all Cadets go through the same curriculum. During the second the Cavalry and Infantry are separated, 520 Cadets are admitted. The lecturers are chosen by the War Minister.

The best German account of the re-organised French Army is that of Colonel Hepke, which is embodied in a volume of 600 pages, and is most exhaustive. It is called *Das französische Heer am Ende des neunzehnten Jahrhunderts*.

GERMAN EMPIRE.

There are but few changes to note in the organisation of the German Army in 1900.

Mounted Rifles.—On 1st October, 1900, 3 squadrons of Mounted Rifles were formed, one attached to the 11th Hussars (VII. Corps) at Wesel, and two attached to the 14th Hussars (XI. Corps) at Langensalza.

The Staff of a III. Bavarian Corps was formed on 1st April, 1900, at Nürnberg. Of this corps the 3rd Division has 1 Brigade and Division Headquarters at Nürnberg, and the other at Bayreuth. Its 6th Division has 1 Brigade and Division Headquarters at Regensburg, and the other at Ingolstadt. The 3rd Cavalry Brigade is quartered at Nürnberg and Bayreuth.

A new Military Map showing the territorial distribution of the Army Corps and Divisions, etc., was published for 1901 by R. Schröder, of Berlin.

The new Code of Military Law, etc., came into force on 1st October, 1900. Each Army Corps has now in its command a Brigade-Division of

3 Batteries of Light Field Howitzers, which is attached to one of its Infantry Divisions.

A "heavy" ration of 6 lbs. oats and 3 lbs. straw per diem is now issued to horses drawing heavy guns at manœuvres.

By an order of the Secretary of State of January, 1900, several more of the better-paid appointments in the Post Office were to be kept open for old soldiers. 6 weeks' courses of training in Field Telegraphy were held in Königsberg, Danzig, Thorn, Posen, Köln, Mainz, Strasburg, and Metz for soldiers. 14 days' practical Field Artillery courses were held, which were attended by Divisional and the senior Brigade Commanders and by Commanding and Field Officers. 2 months' courses were held for Captains and Lieutenants at the School of Musketry at Lechfeld in Bavaria, as well as 5 weeks' courses at Spandau. Courses at the Infantry Instructional Battalion were attended by Captains and Lieutenants. Engineering courses for Commanding Officers of Infantry, which lasted 12 days, were also held.

New regulations for the annual General Staff rides were issued.

Manœuvres.—Imperial Manœuvres on a large scale were held in 1900 (which have been already described in detail in the JOURNAL). Cavalry tactical exercises were held at Alten-Grabow, two Cavalry Divisions with Artillery and Mounted Engineers manœuvring under the direction of Cavalry Inspectors-General. The IV. and XVI. Armies carried out exercises in the attack of fortified defensive positions with blank cartridge, and field firing practices with ball cartridge were also executed.

In accordance with the German Emperor's order to abolish all foreign terms in nomenclature, all the Metz forts are now styled *Feste Kronprinz*, *Feste Haeseler*, etc., instead of Fort. The Sanitary *Detachments* are now Sanitary Companies (answering to British Bearer Companies).

A good epitome of German Army organisation is the *Leitfaden für den Unterricht über Heerwesen auf den Königlichen Kriegsschulen*. 8. Auflage. Berlin, 1900. G. S. Mittler Sohn.

HOLLAND.

A National Defence Union was formed in 1900, which already numbers 13,000 members and has 85 branches. Its object is to promote the universal practice of rifle shooting and gymnastics, in view to the defence of the country, should it be invaded or drawn into war. The War Minister has given the members opportunities for using the rifle ranges of the troops in or near the garrisons.

Rifle practices are to be carried on weekly from May to August, and all young men from the age of 16 to 24 can take part in them, besides, of course, the Reservists and Militiamen on presentation of a certificate that they have undergone the necessary preliminary instruction. No more than 15 rounds are to be fired by any man in one day.

The War Minister has made a grant in aid of 10,000 gulden (£834) in this year's Budget. The men pay for the ammunition, and the Union defrays the expenses of the service.

Short range Morris tube, or similar ranges, are also being established.

ITALY.

No changes are reported in the organisation of this Army.

On 1st April, 1899, the total "rationed" strength was as under:—

	Officers and Men.
Standing Army (with the colours - - -	251,078
" on furlough - - -	503,857
Active Militia - - - - -	304,587
Territorial Militia - - - - -	2,106,239
Total - - -	3,168,761

As reported last year, the Standing Army was increased by 10,000 men. The war fighting strength is nearly the same, however, as reported in the JOURNAL for October, 1894.

At the end of January, 1900, Captain Carrara's military cycle was finally approved for the Service. 2 Cyclist Companies took part in the Cavalry Manœuvres.

Officers of Engineers have been sent to Paris to study automobiles, and further trials with these will be made next year. The Alpine troops. —Numerous experiments were made with war balloons and homing pigeons. The photogrammetrical plans made were successful. Between Etna, Sicily, and Malta an optical telegraph has been established. This works well. The distance is 191 miles. The forts, etc., of the Straits of Messina have been connected telegraphically on the wireless system.

Numerous new issues of official regulations, etc., were made in 1900.

The Report gives interesting details regarding the various schools of instruction, which we have not space to transcribe. Progress is evident. The whole Army deplored the untimely death by assassination of their beloved King Umberto, but has entire confidence in his successor, Victor Emmanuel III., who is so distinguished as a scientific soldier.

JAPAN (*From 1898 to 1900 inclusive*).

When the re-organisation of the Japanese Army is completed in accordance with the Imperial decree of 1896 it will consist of 13 Infantry Divisions, 2 Cavalry Brigades, 2 Field Artillery Brigades, 17 Battalions Siege and Garrison Artillery and 1 Railway Battalion, 13 Engineer Battalions. Altogether 156 Infantry Battalions, 51 Squadrons, 114 Batteries, 13 Engineer Battalions, 13 Train Battalions, 17 Garrison Artillery Battalions, and 1 Railway Battalion on a peace footing.

In war the following units are mobilised in addition:—

52 Infantry Battalions, 17 Squadrons, 19 Batteries, 13 Companies Field Engineers, 13 Companies Train from Reserves. 104 Infantry Battalions, 34 Squadrons, 76 Batteries, 26 Companies Field Engineers, 26 Companies Train from Territorial Troops and Militia.

The total war strength would then be :—

Active Army, about	-	-	-	-	-	228,500
Reserve	-	-	-	-	-	33,300
Territorial	-	-	-	-	-	125,600
Total						387,400

Of these, 250,000 were available in December, 1899, for foreign active service.

<i>Composition of an Infantry Division.</i>	2 Brigades=2 Regiments=6 Battalions	} Combatant Troops.
	1 Regiment Cavalry=3 Squadrons	
	1 Field Artillery Regiment=2 Brigade Divisions=6 Batteries of 6 guns	
	1 Battalion Engineers=3 Field Companies with a bridge train	
	6 Ammunition Columns=4 Infantry, 2 Artillery	
	1 Bearer Company	} Non-com- batants.
	6 Field Hospitals	
	1 Supply Column	
	1 Battalion Train	
	1 Telegraph Detachment	

An Infantry Company=217 rifles, 1 Squadron=120 horses, 1 Battery=6 guns 150 men, 1 Field Company Engineers=220 men. Total strength about 14,000 men. The Imperial Guard and the 1st Division have each a Cavalry and an Artillery Brigade. It is intended to complete 12 Infantry Divisions.

Recruiting and filling up the cadres are carried out on the German system, which has answered well.

There is a Major-General as Chief of the Staff, and the Divisional Staff is organised as in European Armies. The Divisional Commander is usually a Lieut.-General.

In Formosa about 9,000 men are stationed. They are in 3 mixed Brigades of 3 or 4 Battalions, 1 Squadron, and 1 Battery Artillery each.

Mobilisation.—In the China War 5 Divisions mobilised in 17 days, each Division consisting of 13,000 combatants and 8,000 non-combatants.

Rifle practice is carried on throughout the year as follows :—From January to May once or twice a week ; from June to December field-firing once or twice a month. Company Commanders are responsible for the shooting.

The Cavalry is inferior to the Infantry and deficient in knowledge of the use of ground.

In the spring of 1900 new Field Service Regulations were issued, which are, in fact, copied from the German Field Service Regulations of 1894. Careful instructions for embarkations and disembarkations are added.

In 1899 the Autumn Divisional Manœuvres of the 1st Division were preceded by embarkation practice, a mixed Brigade embarking at Yokohama and being conveyed to Tatayama 40 miles off.

The discipline of officers and men is excellent, and the troops upheld in the late Boxer difficulties in China the reputation they had gained in the previous war with that Power.

RUSSIA.

Owing to the China complications, progress in the European forces of Russia as regards new formations, etc., has been slower than usual. The Russian forces are kept on different establishments according to the local requirements. There is the ordinary peace establishment for home stations, the higher peace establishment for frontier troops, and the war establishment. This latter is generally maintained by the greater part of the troops in Asiatic Russia.

According to a trustworthy account, the following was an approximate summary of the total peace strength in 1900 :—

In European Russia and the Caucasus.

	Infantry	Cavalry	Artillery	Engineers	Train and other Services.	Total.
Field Artillery ...	510,000	110,000	82,000	29,000	—	731,000
Reserves ...	64,000	400	9,000	1,000	—	74,400
Fortress Garrisons ...	39,000	—	38,000	4,000	—	81,000
Ersatz (2nd Res.) ...	—	5,700	2,800	—	—	8,500
Local Troops ...	14,000	400	6,000	200	31,000	54,600
Grand Total ...	627,000	116,500	137,800	34,200	34,000	949,500

In Asiatic Russia.

Field Army ...	57,000	14,000	9,000	7,000	—	87,000
Reserves ...	12,000	—	300	—	—	12,300
Fortress Garrisons ...	4,000	—	5,000	600	—	9,600
Local Troops ...	10,000	—	200	—	5,000	15,200
	83,000	14,000	14,500	7,600	5,000	124,100

The Report gives the Corps stations and Military District centres, etc., which space does not admit of reproducing. Many of the changes made in 1900 in the Siberian Corps and the organisation of the troops in the Kwang-tung Peninsula were noted in the JOURNAL for April, 1901, p. 491.

The following are the ages at which Commanding Officers on the active list must compulsorily retire :—

Cavalry Regiments	-	-	-	-	-	56
Infantry	-	-	-	-	-	58
Brigade or District Commander	-	-	-	-	-	60
Divisional Commander	-	-	-	-	-	63
Corps Commander	-	-	-	-	-	67

Many retirements took place in 1900 in consequence.

Efforts are being made to increase and improve the Staff College, the War Schools, and the Cadet Corps, in view of the many vacancies regularly occurring.

A curriculum for Lecturers and Instructors has been laid down. The course lasts 9 months.

The Grand Duke Constantin Constantinowitch has been appointed Director-General of Military Education.

Mobilisation.—The untoward events in China found the Russian Troops in Eastern Asia in a state of transition, as their re-organisation was being proceeded with. The occurrences in Peking in May, 1900, necessitated immediate reinforcements of the few Russian troops in China. 4,000 were sent. By the end of July there were available 16 Battalions, 38 Guns, 6 Sotnias Cavalry, 2 Sapper and 2½ Railway Companies of Engineers. In June the troops of the Amur District and some Cossack Regiments were hastily mobilised, and meanwhile the troops first to hand were hurried forward to oppose the attacks of the Chinese in Manchuria. Three European Brigades of Rifles with their Artillery were called up to the support of the Russians in Eastern Asia. The 4th Siberian Corps furnished reinforcements to the troops in the Far East in July. The main line of the Manchuria Railway, upon which the Chinese hordes had made constant raids, and had broken up in parts, was again in Russian hands by the 2nd September, 1900.

Altogether about 173,000 men, inclusive of the garrisons and the European reinforcements, were eventually assembled on the theatre of war in Eastern Asia.

In October, owing to the great expense of keeping up so large a force, demobilisation began, and the force is being gradually reduced to a peace footing, the European reinforcements being gradually retransported to their proper garrisons.

Though on the whole the mobilisation and reinforcement of the Russian Army in Eastern Asia was a success, several defects in the mobilisation machinery were discovered, which will have to be remedied.

Manœuvres.—The usual Summer and Autumn Manœuvres were held, and the Report details these.

The issue of the new Drill and Tactical Regulations has made continuous progress. The "Instructions for the Combat," a recent issue, is a sort of Tactical Handbook for all arms. It has been tried at manœuvres, and does not meet with universal approval. It is being modified by a committee.

The Felddienst, "Instructions for Field Service," dates from 1899. The most complete account of the Russian Army, its organisation, etc., is to be found in the work by Colonel Gulewitsch, of the Imperial Staff College, *The Armed Strength of Russia*, 3rd Edition, 1900, which is being translated into German; also the shorter *Russia's Military Strength, according to the most recent Official Information*, Lemberg, 1900.

TURKEY.

There are few changes to be reported. Turkey has 7 Army Corps of Nizam or Regular troops, numbering 320 Battalions, 200 Squadrons, 255 Horse, Field, Howitzer, and Mountain Batteries, and 145 Siege and Fortress Artillery Batteries, 36 Companies of Engineers, including Bridging Train, 8 Railway and 5 Telegraph Companies, 24 Companies of Train Troops, with 63 Companies of artificers and workmen. There are 374 Battalions of Redifs (Militia) Infantry, and 666 Battalions of Ilawe (2nd Reserves), besides some Irregulars, 48 Squadrons of Redif Cavalry, besides 266 Squadrons of Kurd Irregular Cavalry. These are nominally affiliated to corps. In addition, there are distributed through the whole kingdom 136 Battalions of Gendarmerie, 200 Squadrons of Mounted Gendarmes. Then the Mustaphi (or Landsturm) are liable to be called out in war only. Two Divisions of these were mustered towards the end of the late war with Greece.

As is well known, the Nizam are splendid soldiers. The Redifs are good troops, and the Ilawe have also proved their value in war.

Every Turk is liable to service, unless unfit, from his 20th to 40th year. He serves 6 years in the Standing Army, of which 3 years with the Colours in the Infantry and 4 in Cavalry or Artillery; then 8 years in the Redifs. The remaining 6 years up to 40 he is enrolled in the Mustaphi (only called out in war). Many exemptions are obtained by money payment, etc. There are two half-battalions of Mounted Infantry on mules. There are, with the Cavalry, 2 squadrons of Camelry. The Field Artillery Brigades are of 2 regiments each, and 1 H. A. Battery. 1 regiment has 2 Brigade-Divisions, each of 3 Batteries. The 2 Field Howitzer Regiments of 2 Brigade-Divisions have also 6 Batteries each. The Mountain Brigade-Divisions have in some instances 4 Batteries. The Batteries have 6 guns and ammunition wagons, some more wagons. A few of the batteries have Q.F. field guns.

The total Strength of Fighting Troops available is:—

Officers	- - - -	19,000
320 Btns. Nizam Infantry (about 700 per Btn.)		224,000
374 „ Redif „ „ 750 „		280,500
666 „ Ilawe „ „ 1,000 „		666,000
200 Regts. Nizam and Redif Cavalry (Squadrons 100 Subalterns)	- - -	25,000
255 Batts. Field Artillery (6 Guns, 110 men)		28,000
145 Cos. Fortress and Siege Artillery	- -	29,000
Technical Troops	- - - -	10,000
Total	- - - -	1,262,500
Irregular Kurdish Cavalry	- - - -	32,000
Tripoli Irregular Cavalry	- - - -	3,000
Infantry	- - - -	10,000
Grand Total	- - - -	1,307,500

In 1900 the blockhouses, which were designed for the defence of the Greek frontier, were completed, and good progress was made with the earthworks round Adrianople and Kirkileseh.

Armament.—The 7·65-millimetre (·301-inch) Mauser* is now issued to the 9 Nizam and 12 Redif Divisions, and to 170 Battalions of the Ilawe Reserves; 220,000 more of these are ordered for the remainder. Until these rifles are available these troops continue armed with the Martini-Henry or Peabody rifles.

When the last ordered supply of ammunition is received from Germany, there will be 500 rounds available for each rifle. Smokeless powder is at present obtained from Germany, but the plant having been now obtained it will shortly be manufactured in Turkey.

At present Q.F. field guns have been ordered from Krupp, but it is hoped these may be made at home shortly, as the 4·7-inch field howitzers and the 2·95-inch mountain guns used in the war with Greece were made in Turkey, and were considered a success.

The *Topographischer* map of Asia Minor, compiled by the officers of the Topographical Section of the French General Staff, is completed, and has for the most part been issued.

PART II.

Reports on the different branches of the Service.

(1) INFANTRY AND COMBINED TACTICS, 1900.

Tactics of the South African War.—The campaign of the British in South Africa is of predominant interest. New weapons and new appliances of war were, however, brought into use in this campaign under such peculiar circumstances that it is only with extreme caution that the value for European warfare of the tactical experience gained, which is here epitomised, can be estimated. The Boers proved themselves a formidable body of troops, admirably mounted for long-lasting effort, but for fighting on foot only. Their performances as crack shots and their skill in the use of ground adapted them especially for defensive fighting. At the same time the engagements in South Africa prove that mere defensive fire can never bring about great successes, and that Militia forces are incapable of carrying out thoroughly the tactical offensive.

Their great mobility and extraordinary shooting powers enabled the Boers to occupy on a wide front extensive positions and to deceive the British as to their strength. It is only by this that we can account for the advantages gained by the Boers by their occupation of advanced positions. Their employment of artillery was undoubtedly correct. Numerically inferior, they avoided the artillery duel and reserved their fire for the attacking infantry.

The fighting method of the British in the early part of the campaign took no account of the possible use by their opponents of long-range

* This is a good rifle, with a cut off, but fitted with clips.—TRANSLATOR.

rifle fire or of the exceptional character of the 'ground—open country free from cover and an atmosphere so clear that it led to a constant under-estimation of the distances. Yet, with all these advantages to the defence, the loss of the attackers was small: at Magersfontein, 9 per cent.; at Colenso, 5½ per cent. This confirms the theory that, with improved weapons, battles become less bloody. At Stormberg there were 3½ per cent. killed and wounded, but over 25 per cent. prisoners. This is to be accounted for, not by the organisation of a mercenary Army, otherwise it would have been so in former wars waged by British troops, but rather by the exhaustion of the men in the weary long-lasting actions, by the terrible heat, and by the want of water.

The intention to maintain close order as long as possible, and to get as near to the enemy as possible before opening fire, had to be renounced immediately after the first few engagements. The regulations of the Drill-book had to be thrown overboard, and each leader tried to improvise an attack of his own. This led to absence of all system. Even on the line of march the normal formations were given up and troops advanced on a broad front covered by skirmishers.* In the attack thin lines of skirmishers on widely extended fronts were opposed to the broad fronts of the Boers, and all deep formations were dispensed with. This had no evil consequences, for the Boers kept no Reserves in hand and showed themselves very sensitive of any movements of mounted troops threatening their flanks.

In the later stages of the war we see the British infantry under Lord Roberts carrying on a demonstrative frontal attack at long range to give time for the turning movements by cavalry, mounted infantry, horse artillery, and machine guns to take effect. The appearance of these outflanking troops was always the signal for the retirement of the Boers. But the success of these tactics was entirely due to the inactivity of the Boers, who confined themselves to passive defence, and they led to no decisive results, as the Boers always withdrew in good time.

Night Attacks.—These, says the author, are unavoidable, and are applicable at all times either to withdraw from a critical position, or to effect a surprise, to seize a small post (as at Spion Kop), or to pass over a fire-swept zone, that by day would be impassable without terrible loss, in order to gain positions nearer the enemy, whence fire could be resumed at early dawn on the enemy's positions (as at Belmont). The conditions necessary to success are:—1. Thorough Reconnaissance. 2. Early adoption of the intended attack formation in order not to be surprised by hostile fire while deploying. 3. Last, not least, instilling into the minds of all engaged that directly the enemy begins to shoot there is nothing for it but to rush him.

He says that at Stormberg the sudden opening of fire by 1,500 Boers completely paralysed the attackers, that 633 unwounded British were

* The writer has apparently overlooked Secs. 47 and 133 of "Infantry Drill." Had the spirit of its provisions been generally complied with by leaders, not so much blame would have been incurred.—TRANSLATOR.

made prisoners,* though the proportion of killed and wounded was not great.

At Magersfontein the attacking British had no knowledge of the enemy's real positions, and let their heavy columns approach within 400 paces of these before deploying.

All the experience gained points to the impossibility of night attacks on a large scale.

The want of proper *intrenching tools*, taken from the men to lighten their load, was often felt. Portable shields are said to have been made use of.**

Bicycles were not used by the British, but were employed by the Boers for messengers.

Machine Guns have proved useful. The *Quick-firing guns* of small calibre, christened Pom-poms, do not appear to have answered, for they were invented for use against boats from men-of-war, and not against moving men. The British system of *Flag and Lamp Signalling* answered excellently, though certainly the conditions were favourable.***

The necessity for mounted scouts accompanying Infantry in action strongly asserted itself. Infantry patrols were superfluous when good field glasses were at hand.**** Though the cavalry were not conspicuous in their dust-coloured khaki uniform, yet the open ground, smokeless powder, and the good shooting***** of their opponents made their scouting a very difficult task. The bad condition of the horses sent at once up country after a long voyage, and unaccustomed to the rough veldt fare, and want of water, increased these difficulties. The 5th Lancers, who were shut up in Ladysmith, were however acclimatised.

The *British Artillery* suffered from the same disadvantages as regards horses. It was also outranged by the well-concealed and well-served Boer guns. In the early part of the campaign there were no Howitzers. The shrapnel of their field guns was useless against the Boers well sheltered in trenches, because the British Infantry kept back and did not compel the Boer Infantry to take up firing positions.

The most important lessons to be learnt from this campaign as regards the Infantry attack, are that frontal and flank attacks must be well combined and simultaneous, that all piece-meal attacks must be avoided, and that Infantry and Artillery must work *simultaneously* in mutual support. It is only by Infantry advancing at once to effective range that the defender can be compelled to take post for firing.

* It was the utter exhaustion of the men after a long journey and a fatiguing night march, they having been 16 hours under arms.—TRANSLATOR.

** I can nowhere find confirmation of this.—TRANSLATOR.

*** The writer probably means to include the heliograph, though he does not specify this.—TRANSLATOR.

**** Field glasses will not discover hidden men.—TRANSLATOR.

***** The accuracy of the Boer shooting is much disputed by some officers who were much engaged.—TRANSLATOR.

(2) QUESTIONS OF GENERAL INTEREST.

As a result of the experience gained in the South African War, it is recommended that when within effective infantry range, gradual creeping forward should take the place of the forward rush. The half-battalion of the Cornwalls crept forward in this way through the extended lines of the Shropshires and Canadians until within 700 yards of the enemy at Paardeberg, and from thence until within about 80 yards. Similarly at Spion Kop 550 Boers are said to have crept forward gradually (only 320 yards in an hour) with a loss of 35 men, and, supported by their Artillery, to have compelled 2,000 British to retire. No exact confirmation of this is yet to hand. A soldier skilfully creeping forward in this way offers but a small mark; but this method is most exhausting, and hands and knees become painfully swollen in the effort, so that good shooting is impossible. It moreover lengthens the time of the advance, and the direction is difficult, so that it is only rarely applicable. Troops creeping forward in this way become cramped, and are difficult to rouse to the assault. The rapid advance by rushes is easier supervised by the officers. It is a matter of experience.

INDIVIDUAL STATES.

Austria-Hungary.—A new Infantry Drill is pending, founded on the rifle experimental trials at the School of Musketry in Brück-on-the-Leitha from 1896 to 1899. In 1900 only provisional lithographed copies were used, and are published.

As the result of these trials the following principles are given:—

1. At medium and short distances volley firing is inferior to the individual fire of skirmishers.
2. The individual fire of a section (Zug) in extended order is more effective than the volley firing of the same section at close order at medium distances.
3. Even at long range well-trained and practised troops will obtain better results from individual firing than from volley firing.
4. From experiments against a half-battery at from 1,600 to 2,100 paces, it was found that the individual fire of a section extended was as effective as the volley firing of a whole company (3 sections or Züge) in close order.
5. Firing at Artillery in action with Infantry four-deep can be employed with effect.
6. Open file formations must be adopted by the troops intended to carry the attack forward, and, within the zone of effective Artillery and long Infantry fire, sections or half-companies in line or open order on the same alignment will be suitable formations.

It is to be remarked that in the Austrian Army volley firing by small sub-units prevails. The recent experiments have borne out the views in Germany as to the advantage of individual over volley firing.

Imperial Manœuvres were held in Galicia, north of the East Baskaden Mountains (Carpathians). The 1st Army, under command of General Baron von Waldstätten, was composed of the I. and VI. Army Corps (each of 2 Infantry and 1 Landwehr Divisions) and of the 7th Cavalry Division. The 2nd Army of the X and XI. Army Corps and of the 6th Cavalry Division and the 18th Cavalry Brigade under command of General Galgetzy. Each Army had a balloon detachment with 2 spherical war balloons. The Reserves were called in to bring the units up to considerable strength. The supply arrangements were as in war. For example, every man carried 2 reserve rations and a small tin of preserved meat, each horse 2 reserve forage rations. Each Army head-quarters had at its disposal a four-seated motor car and a lighter two-seated one. Each Corps had also a light motor wagon and (excepting the X.) a heavy traction motor.

The opposing Cavalry Divisions were at the commencement of the manœuvres 19 miles apart, and the distance between the head-quarters of each Army was about 35 miles. The frontage occupied by the 1st Army was 50 miles, that of the 2nd Army 38. These manœuvres, though showing the excellent training of the troops* and the skill of their commanders, call for no special remark. The railway organisation was good and this service is worth notice. In 3 days 82,212 officers and men, 6,223 horses, and 320 carriages were entrained from 6 different stations, and were carried home along 3 single-lined railways. Combined manœuvres with the Lower Danube Flotilla were carried out on 28th and 29th August, 1900, and are worth noticing. The Southern Army tried to force the passage of the river defended by the Northern Army. The Southern Force had 5 Battalions, 1 Squadron, 1 Field Battery, 1 Field Company of Engineers, 2 Bridging Trains, 2 Monitors, and 1 Patrol-steamer; the Northern, 1 Battalion Rifles, 1 Squadron, 2 Monitors, and 1 Patrol-steamer. The use of flotillas should be confined to very wide rivers, etc., as otherwise the vessels could make no progress under the fire of superior artillery. If the defender has torpedo-boats an attack could hardly succeed, and in any case the use of patrol-steamers in wide rivers is indispensable.

France.--In September, 1900** manœuvres on a large scale were held in La Beauce, under the direction of General Brugère. Unlike in those of former years, the drill-books were left untouched, and only the orders for the carrying out the manœuvres and a few directions regulating the conduct of the actual fighting were issued. All movements were as much as possible to be directed by signalling. Extensions for battle were to be slowly and methodically carried out, time being allowed for

* The excellent marching of the troops, the good sanitary arrangements and details of the reserve rations, etc., were brought to notice in the *JOURNAL* for January, 1901, p. 93, being epitomised from the *Revue Militaire Suisse*.—TRANSLATOR.

** The programme of the manœuvres in September, 1901, was published in the *Marché*, 1901, No. of this *JOURNAL*, p. 355. They were designed on a large scale, and promised to be of great interest, which in the result was however chiefly spectacular.—TRANSLATOR.

the preliminary artillery action. The frontage occupied was to be strictly confined to that which was suitable to the troops on the ground who were on a peace footing, and was not to extend to that prescribed for units at full war strength, without special permission from the Director of the manœuvres. No movements were allowed after the manœuvres for the day were over or during the night.

A South Army, composed of the V. and IX. Army Corps and the 5th Cavalry Division, comprising 48 Battalions, 40 Squadrons, and 42 Batteries were placed under General Lucas.

A North Army, composed of the IV. and X. Army Corps and the 1st Cavalry Division (52 battalions, 40 squadrons, 41 batteries) was commanded by General Négrier. A 4-inch howitzer position battery was tried. Every unit engaged was given part of its regimental transport, each company having 1 ammunition wagon, and part of the hospital and supply transport accompanying the head-quarters.

The *General Idea* for the 15th September, and following days was that Paris being invested by the enemy (South Army), a relieving force is on the march from the Loire. A Northern Force is covering the Line of Communications of the besiegers. Before the movements, the advanced troops of the contending forces were 30 kilometres (19 miles) apart. On the 15th both advanced. The South Army had pushed forward a Division as an Advanced Guard for its forces. The reconnaissance was however a failure, and the Director of the manœuvres had to interfere to put the contending forces in the right direction, or they would have passed each other undiscovered by either side. On the evening of the 15th they were only 13 kilometres (8 miles) apart, so that the employment of the Cavalry Divisions as advanced cavalry was impracticable.

The days on which actual collision took place offer but slight interest. A night attack took place on the early morning of the 16th, which was remarkable for the utter absence of reconnoitring by the Cavalry of the defence and for the want of vigilance of the outposts. A field electric light apparatus failed, for though it lit up the point of attack, it vividly betrayed the position of the attacking force. It was only when raised about 5 feet that this defeat was obviated.

On the 18th September, manœuvres against a "marked" enemy were carried out. The South Army, now made up to 4 Army Corps and 1 Cavalry Division, advanced, covered by this Division, and by the IV. Army Corps as advanced guard to the whole force, and followed by the IX. Corps in reserve to make an enveloping attack on the enemy's position. In front of the right wing of the Defensive Force, and about 1,500 metres from the main position, was an advanced position on a frontage of about 4 kilometres ($2\frac{1}{2}$ miles). In a fight between the marked enemy hampered by strict defensive instructions and a strong advanced guard, such as an Army Corps, the inherent defects of advanced positions could hardly be displayed.

According to the Director's instructions, the movements of strong massed reserves, the passage through the lines of guns by the attacking /

infantry, and the deployment of the troops destined to the assault opposite the principal point of attack was to have been practised. The Manœuvres closed as usual with a grand parade, march past, etc., the only novelties of which were the advance in line of the whole corps artillery and the delivery of quick-fire opposite the tribune of the President. 15 rounds a minute were fired by each gun with blank cartridge. The whole manœuvres were of a parade nature. The Director often interfered, nominally to see that the programme was adhered to, but in reality also to ensure the simultaneous advance of the whole force in the attack.

The battle training of the Infantry is said to have been deficient. Their excellent marching and the silence with which all movements were performed were, however, praiseworthy. The Cavalry made a less favourable impression, especially as regards its scouting, and, when supported by its Infantry in the fight, scouting was altogether neglected. The massing of guns was attempted, but not entirely with success. The employment of motors for the rapid movement of general and staff officers and for the traction of supplies was practical:

The introduction of meat carts much facilitated supply. For each battalion, each Brigade-Division of field artillery, and each Division of corps artillery a meat cart was provided, which moved with the light baggage. Every man carried 2 days' preserved rations; 2 days' preserved meat are carried with the heavy baggage. In the supply train 4 days' preserved rations per man are carried, and 4 days' meat rations per man are driven along, so that in an Army Corps 8 days' supply per man are carried. The flocks and herds are divided into 2 sections, each section representing 2 days' supply for the force, and the whole being driven in rear of the heavy baggage. Behind the supply train follows the meat supply park with 2 days' meat rations per man. The meat wagons convey the first meat rations to the troops.

The heavy baggage with the first section of the animal train follows the fighting columns at such a distance as would enable it to be reached on halting at the end of each day's march. Then the fresh meat supply in the wagons is distributed for the following day, the animals following them are slaughtered and cut up, and the pieces hung on the hooks with which the wagons are provided. The slaughtered animals are, if possible, replaced by those collected in the country, the meat-supply park not being trenched on if it can be avoided. As the meat wagons follow in the light baggage and meat rations for the following day have already been issued, the troops can always cook their dinners on arrival in camp without waiting for the heavy baggage to come up.

In France no new regulations for the tactical employment of Infantry have been issued. A new Infantry Drill is, however, in contemplation, and a special committee has been sitting to consider this, of which General Lucas is president. Its propositions are being provisionally tried, one infantry regiment in each Army Corps being entrusted with this duty. In the manœuvres of 1900 the endurance of the soldiers under hardships was remarkable. The quiet regularity with which all move-

ments were executed was recognised, the troops being thoroughly trained to move by signal. The pronounced offensive spirit, the "forward" impulse, led often to want of proper reconnaissance, which resulted in frequent surprises. Thorough preparatory fire was not altogether apparent, nor was mutual support by lateral bodies. Great depth and delay in deployment characterised the movements, the attempt at simultaneous attack being a great feature. All this may be set down to manœuvre habits, for the regulations are emphatic as to the necessity for thorough preparation by fire.

General Banual, a member of the Infantry Drill Committee, has published his views, formed while he was an active regimental commander.

He emphasises the individual and methodical training of each man, demands that all exercises shall be suited to battle requirements, rejects the view that victory depends on the success of a number of isolated combats, and requires the simultaneous attack of masses in equal strength along the whole front, in order to exhaust the defender at all points and prevent his withdrawing troops from any part to reinforce with his reserves that most seriously threatened. The decisive attack is not only to penetrate the enemy's position, but rather to push forward through the gap thus formed the supporting troops, hitherto kept in fairly close order, and, rapidly deploying them, to spread out in fan-like extended order and envelope the defenders, so as to prevent their restoring the battle at that point. The supporting troops must, therefore, make no halt in the position, but push forward.

In the main the author is abreast of modern thought and rightly assigns the greatest importance to the action of the Infantry: "*Where the Infantry strides forward in battle, victory lies near. Where it gives way, defeat is not far off.*"

Germany.—Musketry Regulations to suit the Rifle M/98, have been introduced. Machine gun batteries of 4 pieces, which were first tried at the Imperial Manœuvres of 1899, have been supplied. They are especially valuable in hill warfare, not only in defence, but in the attack. The British used them with effect in the Soudan and Boer Wars. General Rohne's views as regards Infantry and Artillery fire continue to prevail. General von Schlichting's influence on the tactical training of the German Infantry is evidently great. The opinions of von Boguslawski, von Schlichting, and von Scherff are well epitomised in an article in the German Appendix No. 10, Beiheft of the "International Revue," 1900, headed: "The Infantry Fight and controversial questions." On the 1st January, 1900, the new issue of the Regulations for Field Service (Felddienst-Ordnung) was made. The principles of the 1894 edition were adhered to. Changes necessitated by the abolition of the Corps Artillery were made, as well as some additions regarding the employment of Cycles, War Balloons, etc.

The distance between Cavalry Connecting Posts is doubled (now 12 miles), and that between Cyclist Posts fixed at 50 kilometres (31 miles), new instructions for the mobility of Contact Squadrons are given. As a

rule an Infantry Division (12 Battalions) will push forward 1 Regiment (3 Battalions) in the Advanced Guard. Whether artillery is to be sent is decided by the commander. The distances are increased from the van to the main guard and may now be nearly a mile, and a company pushed out from the van may be 554 yards in front of it. Infantry marching alone strengthens its point, indicating the intention to scout for itself. This may sometimes be done by cyclists. The splitting up of the advanced troops into small parties is objected to.

In Outposts, the term Piquet is abolished for Cavalry, this word being restricted to Infantry. No stress is laid upon a line of Cavalry Outposts in front of the Infantry, but when in contact with the enemy the envelopment of the enemy's flank by Cavalry pushed out from a flank is recommended.

The posting of Infantry Piquets* is no longer dependent on the importance of the road to be guarded, but it is considered important to secure any post which is distant from its company, leaving the road itself to be watched by an independent non-commissioned officer's post.

The importance of a post, not its strength, is to determine whether it should be an officer's or non-commissioned officer's post.

Cavalry outposts are instructed to use their firearms. A vedette consists of 3 men generally dismounted, of which 2 are constantly watching, the other resting.

"Advanced Squadrons" support the contact squadrons and connect them with the outposts. At night officers' or non-commissioned officers' posts remain in touch with the enemy. Some cavalry are also attached to each outpost company for scouting.

On the march the average rate for a Division is reckoned as $2\frac{1}{2}$ miles an hour, inclusive of halts. Columns are to be shortened. Artillery ammunition wagons move in rear of the column of guns, the divisional ammunition columns in rear of the fighting troops of the column.

The Imperial Manœuvres, 1900, in Pomerania.—The Report gives a short account of these, but as they were especially detailed in this JOURNAL for February, 1901, it is not translated here.

The *Felddienst-Ordnung* directs that no pauses are to be allowed at manœuvres to admit of the receipt of orders or changes in command, but that everything is to be carried out as in war.

Italy.—Company commanders of 4 years' service are now allowed horses. A 4th Cycle Company is now added to the three Bersaglieri Regiments Nos. 4, 5, and 9.** The cycles are not of the former folding pattern, but made on the *Melli-Rossa* system. 2 Cycle Companies took part in the Cavalry Manœuvres.

Russia.—The new Infantry Drill, provisionally issued in 1897, has been approved with slight amendments after $2\frac{1}{2}$ years' trial. In principle

* It will be remembered that as a rule in the German Service whole companies are pushed forward on outpost duty, finding the supports, piquets, and any detached or examining posts, etc.—TRANSLATOR.

** There are 14 Bersaglieri Regiments, each of 3 Battalions (1,000 Rifles).—TRANSLATOR.

troops in close order work entirely by word of command, so individual fire is then forbidden. In close order the formations are not so dense as formerly. A new "rapid step" has been introduced for the advance under effective fire, but no fixed rate is laid down. The length of pace is from 28 inches to 35 inches, according to the height of the man. In the Battalion in Attack and Defence it is laid down that only exceptionally are whole companies to be extended or to reinforce. The Russians have, however, given up the French plan of having no line of supports in the attack which they had provisionally adopted, and have resumed that of having supports in the first line as the Germans have.

The Manœuvres held in 1900 were not altogether satisfactory, the Cavalry not having been pushed forward enough, especially during the passage of the Weichsel between Warsaw and Ivangorod by a large force of 4 or 5 Divisions (68 Battalions, 47 Squadrons, 192 guns), defended by a force of 50 Battalions, 44 Squadrons, 150 guns. The points of crossing were reported early to the defenders, who massed their troops accordingly to oppose the passage, withdrawing them from all other points of passage. This was taken advantage of by the attacking force to make good their crossing at some of those points, the reported attempts having been mere feints to deceive the defenders.

Great use was made of Mounted Rifles attached to Infantry for scouting purposes.

General Dragomiroff, remarks in regard to the tactical manœuvres, which were held in the Petersburg District and which lasted 12 days, 95 Battalions, 50 Squadrons, and 42 Batteries taking part, that the rôle of Horse Artillery is different from that of Field Artillery. The former begins where the latter leaves off; that is, the Horse Artillery should, owing to the rapidity with which cavalry moves, at once gallop forward to a flank, opening fire on the opposing cavalry and continuing to fire on it until the advance of the cavalry masks its fire. Then it turns its guns on the hostile artillery. Field Artillery, on the other hand, should *first* engage and subdue the hostile artillery and, when that is done, turn its fire on the enemy's Infantry.

Winter Manœuvres were held at Kaluga. The scouting was done by men on snow-shoes, and the guns were drawn on ordinary country sledges, 3 being used for each field gun. Special sledges were also constructed, one for the gun and carriage, the other for the limber. These were not a success, the centre of gravity being too high up.

War dogs were tried, the following being the resulting opinions formed:—

1. Dogs may be of service on watch posts where their natural alertness and sense of smell may supplement the intelligence of the men.
2. They are not trustworthy enough to deliver messages or cartridges.
3. In each company a certain number of men would have to be constantly employed in training and looking after these

dogs, which would withdraw them from their more important legitimate duties.

4. Well-bred dogs are no more trustworthy than common yard dogs.

The Russian Field Service Regulations have been much criticised, especially as laying down too much in detail what is to be done in each particular case.

This year Rules for the employment of the three arms in battle were issued. Detailed instructions are given for the conduct of Infantry, Cavalry, and Artillery in attack, defence, operations by night, in winter, on the steppes and in the mountains.

Stress is laid on the massing of Artillery and Cavalry in battle, the scouting of the Cavalry is to be continued during the action, and the cavalry leader is to lose no opportunity of attacking that offers, no excuse being allowed, such as the presence of hostile cavalry, etc.

Whereas the German Regulations chiefly deal with the encounter battle, the Russians prescribe what is to be done in the attack on an enemy already deployed in a defensive position. Until the Infantry arrives within effective rifle range its movements are to be subordinate to those of the artillery. From that point onwards, the artillery is to conform to its requirements of the Infantry fight.

Great stress is laid on the offensive throughout, and as the Russian advanced guards are large and posted far forward, independent advanced guard actions are favoured by the Regulations.

On the defensive the necessity for counter-attack is accentuated even to the delivery of partial sallies from the position. Advanced positions may be occupied, but must not be defended to the last, as the assailants might then, if successful, follow their defenders closely, and enter the main position with them. The directions for night attacks are to advance without firing with deployed companies in two lines, all distances and intervals being shortened. The touch between companies is kept up by infantry patrols. Special patrols watch the enemy. Reserves are close up. In the instructions for night attacks, directions are always to be given as to what the leaders are to do in case the attack is prematurely discovered by the enemy. Deployment from the march formation to night attack formation is to be delayed as long as possible. The position is to be stormed in silence, and only when it actually comes to the mêlée are cheering and drum-beating to be allowed, as in the dark it might easily happen that the actual position has not been entered, and the noise made would preclude the possibility of surprise.

CAVALRY TACTICS.

General Observations.—The war in South Africa has again shown how important and indispensable a well-mounted and trained cavalry is. The theoretical views regarding the disappearance of cavalry in face of modern firearms have vanished. The employment of cavalry masses at manœuvres, which has become general, proves this. The strategical

employment of cavalry was only practised in Germany. At the other manœuvres the distances between the opposing forces at the commencement was too slight for proper reconnaissance on a large scale. In the South African War the increased importance of tactical reconnaissance was shown. Peace training in careful reconnaissance and riding, and in properly reporting what is useful in war, is seen to be more than ever necessary. But no mere cut-and-dried instructions, nor the too frequent peace practice of reporting as much as possible, will produce skilled and experienced scouts. Strictly limiting practice in peace to that which is possible in real war may do so. In France the best reconnoiters are now distinguished by a special badge, which has been proposed in Germany.

Signalling with heliograph and limelight, as used in South Africa, is now introduced at all great manœuvres.

Wireless telegraphy, war balloons, messenger pigeons, stationary and portable limelight apparatus, enhance the efforts of the cavalry in reconnaissance.

The necessity for a numerous, well-mounted and *trained* cavalry for pursuit has once more been established by the Boer War.

The cry in South Africa was throughout for cavalry and more cavalry, and it still continues. This points to the necessity for an increase of the German Cavalry. In the last 30 years Russia has increased her cavalry by 212 squadrons, Austria by 105 squadrons, and France by 70, whereas the corresponding increase in the German Army has been of 21 squadrons only, although its Infantry has been increased by 203 battalions and its Artillery by 322 batteries since 1870.

The use of firearms by Cavalry in case of need is more than ever required, but this does not necessitate its conversion into Mounted Infantry, as some advocate, though increased attention will have to be paid to long-range firing and judging distance, the use of machine guns, etc. The Boer War has shown the great use of the Cavalry machine guns.

Though the Mounted Infantry attached to the British Cavalry in South Africa rendered occasionally good service, we must remember that their horses broke down so quickly, owing to their want of knowledge of horse management, that only a country as rich and as well assisted as England could have afforded to replace the waste in horseflesh. For European warfare it is undoubtedly better to have Cavalry able to perform their task without such auxiliary aid.

The question of Horse Artillery with the Cavalry Divisions must also be considered. The proposal to have 3 batteries Horse Artillery with the Division, so that one battery may be attached to each of the 3 Brigades, has much to recommend it.

In Germany, France, and Russia experiments were made at last year's manœuvres with boats made of lances and sail cloth for the passage of small rivers. In Austria aluminium boats were tried, and gave general satisfaction.

The Boer War has brought to the front the remount question and the breeding, feeding, and training of horses for war purposes, and all

European nations are engaged in considering these points and the supply of horses to officers.

The use of cyclists attached to cavalry units to relieve the horses from much orderly work is attracting attention. Though in France and Italy folding bicycles are still adhered to, in Germany and Austria they have been given up, rigid cycles being considered more practical. In Germany Infantry Cyclist detachments were used as fighting units with the Cavalry Divisions, but in other countries this has been much opposed.

Motors have been found very useful with Cavalry; and as traction engines shorten the length of trains by from one-third to one-half, they will be of great importance in bringing up the trains to masses of Cavalry pushed ahead. In England they were tried for the transport of heavy guns.

CAVALRY OF THE CHIEF POWERS.

Austria-Hungary.—In Austrian Cavalry circles the wish to obtain stouter built horses has been expressed. White Artillery horses are no longer to be used, as offering too conspicuous a mark. Those of light colour bought in Russia were painted over, and the darker colour thus obtained is said to last a month or more.

At the manœuvres in September in Galicia the opposing forces were too near one another at the outset, and the ground was too unfavourable for successful Cavalry strategic and tactical action. Infantry rifle battalions were attached to the Cavalry Divisions. Each Cavalry regiment had a Cavalry pioneer section of 8 men equipped for telegraph work, demolitions, etc.

Cyclists were used as messengers, but not as fighting troops. Motor-cars and traction engines were used, but did not answer well on the heavy ground, from which it seems that they were not of very perfect construction.

This year 4 Army Corps with several Cavalry Divisions are to operate near Fünfkirchen, in South-West Hungary.

England.—The British Cavalry has had opportunity during the past year of ascertaining by the searching experience of war the faults of its peace training.

Notwithstanding her previous experience of the Boer fighting methods, it needed severe reverses to convince England that her tactics, though they might be suitable to wars waged against inferiorly armed tribes, were inapplicable to her present opponents, and that not only must her infantry tactics be changed, but that she required a Cavalry well trained in reconnaissance, which should combine mobility with fighting power. A Cavalry Division was therefore formed under a capable leader, with a numerous Artillery and Mounted Infantry attached, and a country was selected for the chief theatre of operations where the advantages of this mobile force could be utilised. To the organisation of this Cavalry force may be attributed the great change which soon took place in the position of affairs.

The writer here gives a *résumé* of General French's well-known operations up to the occupation of Bloemfontein on 3rd March, 1900. After this Cavalry and Horse Artillery operations were for the time impracticable owing to the loss and exhaustion of the horses, few regiments having more than 150 horses, and the Artillery being compelled to move at a walk only. It was only after many weeks that the arrival of 4 fresh Cavalry regiments and of remounts for nearly the whole Cavalry that the Cavalry Division was able again to take the field.

By the end of December, 1900, 123,428 fresh horses and 66,727 mules had arrived in South Africa.

The Basuto and Burmah ponies are said to have stood the voyage and work on the veldt best. The treatment and feeding of the horses by the Mounted Infantry, who showed themselves ignorant of the management of horses, is much criticised, as also the quite insufficient numbers of the Veterinary Department.

In consequence of this, Government breeding establishments are to be started in England.*

The indifferent scouting which caused touch with the enemy to be frequently lost, though accounted for by the absence of trustworthy maps, the over-laden, over-worked, hungry, and thirsty horses in a strange country where invisible foes constantly shot down the advanced scouts, may also be attributed to the indifferent peace training in this art. At the Cavalry Manœuvres held in September, 1900, great improvement is said to have been made in regard to this, as it was carried out with close attention to war conditions.

Where the Mounted Infantry** which was 10,000 strong, was properly handled it rendered good service, but not where it was recklessly used, as by Colonel Hannay, who rode against Cronje's entrenchments at Koodoosrand, and fell with the loss of half his force and horses.

The dress and equipment of the men seem to have been good, but the weight on the horses excessive.

France.—All Dragoons will apparently be shortly provided with lances. The number of rounds for rifle practice will be much increased. The dolman is to be given up. The 1st and 5th Cavalry Divisions each of 3 Brigades of 3 Regiments each, manœuvred in September, 1900, south-west of Chartres, under the direction of General Brugère.

Strategical reconnaissances were not properly carried out owing to the distance between the opposing forces being too short. The tactical reconnaissance, especially on the 15th September, was a failure. Messenger pigeons were used and cyclists as messengers only. Signalling was practised.

Motors were much used by the Commanders at the rate of 37 miles an hour. One traction engine drew 30 heavy supply wagons.

* This is mere newspaper gossip, as no orders have been issued for this.—TRANSLATOR.

** The writer probably alludes to our Imperial Yeomanry.—TRANSLATOR.

All Cavalry officers are to be made acquainted with the use of the electric telegraph.

Germany.—The new Field Service Regulations (Felddienst-Ordnung, 1900), introduced certain changes in the strategic use of Cavalry.

The Cavalry Division is no longer responsible for "screening." This is performed by the divisional Cavalry, which, it is considered, should be increased.*

"Scouting" squadrons is a new term. Much greater latitude is permitted in the arrangements for Cavalry Reconnaissance, no hard and fast schemes being allowed.

The Report praises the British Cavalry and Mounted Infantry equipment, short boots and putties being easier put on and replaced than the long boots worn by German Cavalry. Lancers require no swords; these should be replaced by a short hunting knife, that could on occasion be used as a bayonet with the carbine.

Besides the 11 machine-gun batteries already in the German Service, 5 more are to be added by the Establishments of 1901. Hitherto they have been attached to Infantry or Rifle Battalions. Their employment, however, with the Cavalry Divisions seems to be indicated. This is done in Switzerland and England.

The Report goes into the action of the Cavalry on both sides in the Great Manœuvres in Pomerania, which have already been described in this JOURNAL, and expresses its satisfaction with the work done, and with the progress made in signalling, wireless telegraphy, pigeon-post service, etc.

The Engineers attached to the Cavalry Divisions were carried in wagons. Motor-cars were used by the Staff and for the express messenger service, and proved most useful.

Russia.—The Field Service Regulations of 1899, though still inclined to lay down too much, are a distinct advance upon the former issue. The five chapters of Part I. treat of Organisation for War, Leading in War, Reconnaissance and Security, Marches, Camps, Cantonments, and Bivouacs.

The reconnaissance is entrusted to the Advanced Cavalry detachments or corps; screening to the advanced guards; outpost service, hitherto chiefly performed by Cavalry, is now relegated to the Infantry.

The instructions for the troops in battle seem to fulfil their object to ensure mutual action and support, as far as this can be done by regulation. Every kind of action is dealt with and provided for. Cavalry attacking Infantry do so with the whole weight of their fighting formation, which is in several *echelons*, with a reserve. In attacking defiles, Cavalry may attack in column. A general attack of Cossacks with Dragoon detachments and the "Lawa" is said to promise good results. Rules for the dismounted action of Cavalry are given.

* The German divisional Cavalry consists of 1 Regiment Cavalry of 3 Squadrons, whereas at present only 1 Squadron is allotted to a British Division.—TRANSLATOR.

The question of remounts is gone into, the chief feature of which is the abolition of the middleman in purchases.

At the Great Cavalry Manœuvres at Lorza in August, the South Cavalry crossed the Pljussa river by swimming, and then made a general attack upon that of the North while it defended the bridge with dismounted Dragoons and Horse Artillery. It was adjudged the victory.

FIELD ARTILLERY TACTICS.

General Remarks.—Though France and Germany have adopted Q.F. field guns and other Armies have made improvements in their Field Artillery, they have not yet come into general use. One thing is certain, that guns, howitzers, or field-mortars delivering high-angle fire, are indispensable to a Field Army. The South African War has confirmed the necessity for this, which was foreshadowed in previous Reports.

The German Field Artillery has done well to retain common as well as shrapnel shell for use with its Field Batteries. The Report goes into technical details, covering several pages on this subject, which our space does not admit of following.

When massing guns against a strong defensive position, the distance should first be found by trial shots of a single battery, before the whole line of guns opens fire simultaneously on the intended point or points of assault. This will not betray these points to the enemy prematurely. Direct fire is the risk. When the country or the conditions of the fight make a concealed position necessary, then indirect fire is used.

The days of trial shots as range-finders are past. France, Great Britain, and Italy all use range-finders, and Austria is experimenting with one.

Artillery must, however, pay much greater attention than heretofore to careful, thorough *reconnaissance* of the enemy's position and of the ground in front, if full advantage is to be taken of these.

England.—The tactical principles of the British Field Artillery are in accord with those of the chief European Armies.

Massing of guns and fire, unity of control, fire effect, cover and mutual support of Infantry and Artillery, are maxims which characterise English Artillery Drill. The necessity for the use of field howitzers against entrenchments was recognised, and these were supplied. Yet at Magersfontein, Colenso, Spion Kop, Vaal Kranz, the British Artillery failed to overwhelm the Boer guns so as to make the assault of their positions easy. This was because these guns did not attempt an artillery duel with the British guns, but withdrew them for the Infantry assault or awaited favourable opportunities, such as when the British guns were changing position, etc., to fire on the latter.

Effectual reconnoitring of the Boer positions was much hindered by the extraordinary nature of the country, by the perfection of the defensive arrangements of the Boers, and by the skill with which their entrenchments were laid out and concealed. It is at the same time impossible to

acquit the British of want of thoroughness in their reconnaissance, which led them to neglect pushing scouts forward closer to the enemy's entrenched positions. It was impossible to judge of the Boer positions and dispositions from distant observation, as they kept their men so well concealed and withheld their fire.

In such cases no amount of self sacrifice and valour (which the British Artillery certainly displayed) could avail.

Had the British had a well-organised system of scouting, they would have been spared many a disaster. Notably at Magersfontein and Colenso they mistook the actual Boer positions, thinking they were just below the crests of the kopjes, whereas they were in reality at the foot of those in advanced positions.

The fire effect of the lyddite shells was, by Boer accounts, far less than that expected. It failed in depth, and only was destructive in a limited radius, even when the shells exploded immediately on impact.

The shrapnel of the field guns was also less effective than was expected from the reports of the Soudan War. That was because its target was not so easy, and that instead of the range being about 3,000 yards or under, it had to be much greater, owing to the Boer long-range position guns, and for this the fuzes were not adapted. Therefore, the terminal velocity of the bullets was too slight to be effective. Another reason was, that the Boer trenches were zig-zagged in trace and well traversed, so that even the enfilading effect of the shrapnel was much minimised. It was not so much the fault of the British field guns, however, as of the training of officers and men, who failed to understand their proper use. The Artillery had only been practised in field firing in small detachments. Such a thing as *continued* mutual action on a large scale habituating the two arms to work together and engendering mutual confidence in leaders and men, which we in Germany consider indispensable to success in war, is unknown in England.

The invariable practice of the British to keep back their Infantry until the Artillery action is over was noted by the Boers, who kept quietly hidden in their deep trenches, well provided with splinter-proofs, until the artillery bombardment was over, reserving their whole energies for the Infantry attack. Had the British, as the German Regulations now recommend, pushed forward their Infantry *simultaneously* with the artillery bombardment to reconnoitre and draw the defenders' fire, the Boers would have had to man their trenches, and would have suffered proportionately greater loss. Even when the howitzers came into play and the enemy's position was well known, these were not very effectual.

The Field Artillery neglected no opportunity of supporting the Infantry at close range, but their field gun is rather a heavy one, and it was not always possible for these to follow the Infantry quickly over the rough country. It is impossible to give a detailed account of the Artillery in their many engagements in South Africa. A striking criticism of the Artillery action is to be found in von Hoffbauer's "Development of the Mass Action of Guns in the Prussian Army."

France.—At the beginning of the year 1900 three important Artillery questions were awaiting decision :—

1. Was the Corps Artillery to be retained, or, as in Germany, to be distributed among the Divisions?
2. The number of guns required for an Army Corps.
3. The question of 4 or 6 field guns in a battery.

The first question has been much discussed, and is not yet decided, but the tendency seems to be towards the German system, and that the Artillery Generals are willing to give up special artillery interests to the general good, on the understanding that Divisional Generals are practised as frequently as possible in the conduct of artillery in combination with the other arms.

At the autumn manœuvres last year, however, the existing organisation was retained!

The second question has also been much discussed, the outcome being that for the present 120 guns per Army Corps are required.

The third question has at last been decided in favour of 4-gun field batteries, but that 11 to 12 ammunition wagons are necessary for each battery.

As regards steel shields to be carried on the field guns, opinion in France is much divided. It is said that but little protection is afforded by them for the extra weight carried, and that it is difficult to conceal the position of guns carrying them.

The French Artillery officers are apparently of opinion that bold forward action is of more importance than concealment.

Excepting in certain cases where the Artillery was kept too far back before coming into action, or was thrust into the fight in too desultory a manner, or where it changed position too frequently, the French Artillery at the manœuvres was well handled. Its mass action and the concentration of fire on decisive points were much praised.

The disposition of the ammunition wagons in the line seems inconvenient as regards replenishment of ammunition, and dangerous under the fire of Q.F. field guns.

It must be remarked, however, that, owing to the extreme secrecy observed in France in regard to artillery matters, it is very difficult to get reliable information as regards this arm in that country.

Germany.—The new organisation of the Artillery has been carried out as foreshadowed in last year's Report.*

The regulations for marches are in accordance with this. The commander of a force determines whether Field Artillery is to be attached to the Advanced Guard, and if so in what strength. Field Artillery is to be as near the head of the main columns as its early employment in the fight necessitates and considerations for its safety admit of.

With Rear Guards the action of artillery from flanking positions is recommended as facilitating the retirement.

* See November, 1900, No. of this JOURNAL, p. 1318.—TRANSLATOR.

Great stress is laid on care in replacing expended gun ammunition. After every action report is to be made to the commander as to whether this has been done.

In manœuvres great attention is paid to accurate judging distance. As fire effect cannot be well judged of, this is taken into consideration by the umpires.

General officers and colonels of Infantry and Cavalry chosen for the purpose yearly are to attend the Artillery winter courses.

Russia.—The discussions mentioned in last year's Report,* regarding the reduction of the 8 guns in the Field Batteries to 6 have led as yet to no change being made.

The regulations for Attack and Defence are similar to those in the German Artillery Drill, but while the latter recommends the line of batteries at half or close interval when acting in masses, in order to allow of other batteries arriving on the field coming into action without mixing up the units, the Russians recommend keeping the batteries in line at full interval.

In attack, as soon as the point of attack is indicated, the guns take position to a flank. In attack officers are to be sent forward to make outline sketches of the enemy's position, before the guns take up their ground. On the defensive the construction of gun-pits is the rule.

In the Horse Artillery fight, supporting cavalry, the two batteries are to act together, not separately.

In attacking Infantry, the Cavalry must manœuvre so as to hamper the Horse Artillery as little as possible in its action.

The Russian Artillery is not guided by the new "Instructions for the Troops in Battle," in which stress is again laid on the necessity of working by masses.

Up to within effective Infantry range that arm is to be guided as to its positions by the requirements of the Artillery. From that onwards the Artillery is to choose its positions with reference to those of the Infantry. Artillery changes of position under 1 verst (1,107 yards) are, however, to be avoided.

Batteries going forward to support Infantry are to move immediately behind them and move up with the position with them.

At manœuvres a certain time is always allowed for the preparation of the attack by Artillery. This seems to work well.

ARTILLERY MATÉRIEL IN 1900.

General.—In most States the provision of a Q.F. field gun which answers reasonable requirements is still a matter under discussion. Great stress is laid upon the number of rounds that can be fired in a minute. This is a factor to be considered, when people speak of 8, 10, 15, 20 rounds in a minute, which would soon lead to firing away all the available ammunition too soon. The mechanical perfection of

* See November, 1900, No. of this JOURNAL, p. 1318.—TRANSLATOR.

the loading method, and the higher training of the men so that greater skill in quick loading may be obtained, is what is to be looked for; but with short service and Militia Artillery, this is very difficult to ensure.

It is demanded that the gun shall be concealed as much as possible. To do this the piece when unlimbered must be run up by hand. This necessitates a lighter gun. Formerly it was considered sufficient to conceal the gun in the folds of the ground. Now, owing to the increasing accuracy of gun and rifle long-range fire, this is insufficient. The French are carrying steel shields. Whether the protection they afford makes up for the extra weight carried and their increased visibility is a moot point. The great increase of muzzle velocity lately considered so desirable seems now to be less regarded.

The introduction of Q.F. guns for Fortress and Siege Artillery seems to have made little progress. In Austria, they have done more in this way than in other States. Machine guns long since used for fortress are now in general use in the field.

Austria-Hungary.—Little has been done in regard to the Q.F. field gun question. Some Coast and other Fortress Batteries have been re-armed, and attention has been paid to Q.F. field guns and mortars for these.

Belgium.—The Report gives some details of the New Belgian John Cockerill Q.F. heavy and light guns, which it says do not as yet justify the expectations formed of them in Belgium. Their rate of fire is about 10 to 12 shots per minute. Further details are given in the *Kriegstechnische Zeitschrift*, for January, 1901.

England.—There is no law in Germany forbidding the export of war material by private firms, and England was able to purchase from the *Rheinische Metallwaaren- und Maschinen-Fabrik*, of which Herr Heinrich Ehrhardt is the chief constructor, 18 batteries of 6 guns, 9 ammunition and 3 provision wagons. These were delivered five months after the contract was signed. We understand that the Government has expressed a wish that no further supply of guns shall be made. The purchase was made in Germany, because the British firms, of which only two, viz., Vickers, Sons & Maxim, and Armstrong, Whitworth & Co., are capable of turning out good war material, were so slow in their delivery. The Woolwich Arsenal was another source. In 1899, the Government had already ordered from each of the above-named factories a battery in view to the introduction into the British Service of a Q.F. field gun of entirely new pattern. The C.I.V. Corps took out a 7.5 centimetre (2.95 inch) Maxim-Nordenfeldt (Vickers-Maxim) Q.F. Battery, the guns being of old pattern. A battery was offered to, and accepted by, the Government by Armstrong's factory, which was originally intended for the Elswick Volunteers.*

The Report gives further details concerning Sir George Clarke's Q.F. spade arrangement for our field guns.

* These were 12-pounders of the 12 cwt. pattern—see JOURNAL for August, 1901, p. 993.—TRANSLATOR.

It says that the effect of the lyddite shells was not so great as was expected. That in soft ground or against newly thrown up earthworks they were quite ineffectual, though the larger shells worked with good results against brick or stone.

France.—The Report speaks of the impression made on all foreign military officers by the French Q.F. field guns at the Manœuvres in La Beauce, in 1900. It quotes the description of these guns given by the *Times* Correspondent in that paper of the 22nd September, 1900, and says that a new departure has certainly been made.

The weight of the shell is about 14 lbs., the muzzle velocity about 1,800 foot-seconds. Details are given in the 4th and 5th Vols. of *Kriegstechnische Zeitschrift* for 1900.

Germany.—The details of the Light Field Howitzer are as under: calibre 10·5 centimetres (4·134 inches), length about 12 calibres (4 feet 1·6 inches), weight of piece 496 kilogrammes (13·05 cwt.). The breech is on the quick-loading "Keil" or "Leitwell" system by Krupp, of Essen. Total weight about 21·5 cwt.

The Report on these gives further details, which want of space forbids our transcribing. The common shell weighs about 34½ lbs., the shrapnel carries 500 bullets of 10 grammes (.35 oz.) weight. Time and percussion fuzes are used with each up to about 5,000 metres (0,121 yards) range.

The 15-centimetre (5·9-inch) heavy Howitzer is removed to the heavy position batteries.

Two batteries of Krupp mountain guns are in China.

Japan.—Japan has been experimenting in the direction of Q.F. field guns ever since the Chinese War.

A large amount of matériel has been ordered from Krupp, which can be put together in Japan, where they desire to support home industries. 100 mountain guns were ordered from the Schneider-Canet firm, but have not been delivered. It is thought the Russian Government may have had something to do with the delay.

Portugal.—The Horse Artillery has been armed with 2·9-inch Krupp Q.F. field guns. The Field Artillery still have the 8-centimetre field guns.

Russia.—Lieut.-General Engelhardt, the Chief Constructor, lays great stress on a good rate of fire. For this great steadiness of the gun is necessary. He also demands great muzzle velocity up to nearly 2,000 foot-seconds. 1,000 of his guns have been ordered, but the Government has not finally decided in favour of his system. Should guns of an improved kind be adopted later, these will be made use of in Central Asia, etc., to replace the other patterns now there. The rate of fire attained is about 10 rounds per minute.

Detailed tables are given in the Report (p. 382) comparing the Russian light field gun M/95 with the German field gun M/96, and the Russian field mortar M/01 of 15·25 centimetres with the German light field howitzer of 10·5 centimetres.

In 1900 machine guns (Maxims) were given to the 3 Siberian Army Corps.

Sweden.—The Krupp 7·5-centimetre (2·95-inch) Q.F. field gun has been tried, and it is believed successfully, though the details have not been published.

The 6·6-millimetre Hotchkiss machine gun of the Swedish pattern has been recommended by the Ordnance Experiments Committee for adoption, its advantages over the Maxim and Nordenfeldt machine guns being :—

1. Simplicity of construction and repair.
2. Easy recognition of any failure to work properly.
3. Absence of necessity for a water-cooling jacket, so that its presence is not betrayed by the steam.
4. Not so easily injured by damp or dust.
5. Not so easily put out of gear by torn cartridge cases.
6. Cartridge cases less liable to burst.

Switzerland.*

Turkey.—As the result of recent trials, a contract is being made with Krupp, of Essen, to furnish 10 Q.F. field gun batteries of 6 guns each. The Ehrhardt shrapnel shells, which were tried in 1899, did not give quite satisfactory results, owing to the excessive scattering of the bullets. The Krupp shells stood the firing tests better, and the time and percussion shells of the other firm did not stand the endurance tests so well.

SMALL ARMS, 1900.

General.—By the experiences of the South African and China campaigns the calibre question has made considerable progress.

In South Africa the 7-millimetre (·276-inch) and 7·7-millimetre (·306-inch) were opposed to one another, and in China from 6-millimetre (·236-inch) to 8-millimetre (·315-inch) were used. Our opinion is in favour of a calibre between 7-millimetre and 8-millimetre. 6·5-millimetre (·256-inch) should certainly be the smallest for practical purposes.

The Mauser self-loading pistols seem to have answered well in war.

PROGRESS IN ARMAMENT OF INDIVIDUAL STATES.

Germany.—All new inventions and improvements in military weapons are tried in Germany.

The new rifle M/98 was served out to the Marines and other troops sent to China. Then the Infantry of the Guard Corps received it. The Line régiments will be gradually armed with it. Only a small number of these rifles are to be manufactured by private firms in Germany, such as Mauser in Oberndorf. Foreign firms are excluded.

The sighting of this rifle is for 200, 300, 400, 450, and for every 50 metres from that to 2,000 metres. It is called the Langesche sighting.

* The details of the new Swiss Q.F. field gun were given in this JOURNAL for April, 1901, p. 494.—TRANSLATOR.

The rifle is 4·1 feet long, bayonet 2 feet 1½ inches long; weight without bayonet, 8 lbs. 15 ozs., with, 9 lbs. 14 ozs.; weight of 5 rounds 5½ ozs.; a cartridge box (for knapsack) with 15 rounds weighs 16½ ozs.

An improvement on the Mauser pistol was tried in China, and gave satisfaction.

France.—The new Dandeteau rifle has not yet been served out to the troops, though the experiments at the School of Musketry and at the Camp of Chalons were successful.

Holland.—The whole of the Infantry is now armed with the Mannlicher mark 1895, which has a calibre of ·236 inch; length, with bayonet, 5 feet 4 inches; weight without it, 8 lbs. 8 ozs. A Major Giel is said to have designed a good light rifle only 6 lbs. 8 ozs. in weight.

Norway.—By convention with Sweden the rifle ammunition manufactured in Norway was to be of the same calibre so as to fit the Swedish rifle, though it is of a different pattern from the Norwegian arm. The Norwegians are stated to have evaded this contract. Recent experiments show that to resist penetration by small-bore rifle bullets 2 metres thickness of snow is required.

Portugal.—The Portuguese troops have been uniformly armed with the Mannlicher 6·5-millimetre rifle.

Russia.—The Militia are to retain the old Berdan till they are armed with the new three-lined 7·62-millimetre (·299-inch) rifle.

Sweden.—The Swedish Army will by the end of 1900 have only 95,000 Mauser rifles, 6·5-millimetre, out of the 200,000 for which the money was voted in 1896.

Switzerland.—The short rifle M. 89/1900 has been ordered to be supplied to position artillery, fortress troops, telegraph and balloon companies and cyclists, and this is being gradually effected.

Trials with different kinds of "self-loader" pistols and revolvers have been made since 1897. The results are:—1. Borchardt-Lueger. 2. Roth. 3. Mannlicher. 4. Bergmann. 5. Mauser. The final result of later trials is that the Borchardt-Lueger has been recommended. This has a calibre of 7·65 millimetres (·301-inch); length of barrel, 47·2 inches; total length, 93·3 inches; weight with magazine, 2 lbs., which carries 8 cartridges, each weighing 1·4 oz.

MILITARY APPLIANCES.

The Report notices the new military appliances discovered or tried during the year. At the French manœuvres a new lighthouse car was in use. This was a motor-car with two seats (one for the driver and the other for a staff officer), carrying its own accumulators, and a lightly-built pillar throwing the electric light, which is generated by a dynamo of 7-H.P., a distance, it is said, of 2 miles. A new range-finder by Carl Zeiss, of Jena, is described, and the photo-stereo binocular of Goertz and that of Triedner are mentioned. These and other binocular range-finders are more fully described in the *Kriegstechnische Zeitschrift*. Vol. III., of 1900.

An Infantry range-finder, by Major von Zidlitz, was tried at the School of Musketry at Spandau, and met with approval. Each company is to be supplied with that or a similar one.

The Russians are making great efforts to supply their troops with aluminium camp kettles, water-bottles, mugs, etc.

Magnalium is a combination of magnesium with aluminium, which has been invented by Dr. L. Mach. It is lighter than aluminium, and free from the defects of the latter. All cooking and other utensils can be made of it, and cartridge cases, helmet ornaments, buttons, and other articles of equipment, as well as carriage and wagon fittings, can be made of it.

A shield to protect riflemen, invented by Dr. Biles, an Englishman, is said to have been tried by Cammell & Co. It is about $1\frac{1}{2}$ inch thick, a little over 1 square foot in size, and has a loophole in it to fire through. It weighs about 7 lbs.

The two English steam ploughs for furrowing up shelter trenches, which were despatched to South Africa, were lost at sea.

Several new kinds of preserved meat and vegetables have been tried.

A steering-balloon with an aluminium car, invented by David Schwarz, was tried with promising results; but the inventor died, and funds were not forthcoming for further experiments.

Count Zeppelin's air-ship* is considered epoch-marking as regards progress in the steering-balloon question. The cost of this also has, however, hitherto proved an insurmountable objection. Great progress has been made in the application of motor wagons to military transport.

At the German manœuvres in 1900 the American "Stanley" or French "Serpellet" motor, driven by petroleum, was tried. It is on the tubular system, and works with little noise.

These are of great use for general and staff officers, as sparing them the fatigue in being always on horseback and facilitating their work. Cyclist escorts can accompany them.

In France great attention has been paid to military motor-cars, as motors are in more common use there than in Germany. These are chiefly driven by petroline gas ignited by electricity.

The Mors Co. has brought out a four-seated open car for corps commanders and their staff, which can be easily driven at a rate of 36 miles per hour, and has attained a speed of 50 miles an hour on the flat. It weighs $27\frac{1}{2}$ cwt. Another was tried at the manœuvres in the east of France in May which can ascend steep gradients. The body is of aluminium. The Purzcot covered wagon was tried and attained easily a speed of 12 miles an hour. A "Scotte" steam-power motor is said to have drawn a weight of 3,000 tons of war matériel over 1,800 miles up and down gradients, amounting in some cases to $1\frac{1}{10}$ (6°).**

* A description of this was given in this JOURNAL for December, 1899, p. 1331.—TRANSLATOR.

** As these motor-cars travel at an average rate of 25 miles an hour or more, professional cyclists would be required to scout ahead of them. Details of some of these were given in the JOURNAL for November, 1900, p. 1357.—TRANSLATOR.

The English used traction engines for transport in the Boer War. In all the principal European Armies experiments are being carried on with motor wagons, cars, and carriages, for :—

1. The transport of wounded and sick.
2. Field telegraph and postal wagons and other field-message use.
3. For the transport of ammunition and food.
4. For gun transport.
5. In fortress warfare.

As regards armour-plating, the Report states that 15 centimetres (5·9 inches) of Krupp's hardened steel are equal in resisting power to 25 centimetres (9·8 inches) of Harveyized steel, and that the German men-of-war of the "Kaiser" type are equal to any war-ships in the world in offensive and defensive power, and that no nation has ever made such progress in ship-building as Germany in recent years.

The Report states that German naval opinion is not favourable to submarine boats for various technical reasons, and that money outlaid on such dangerous weapons of offence would be better spent on the construction of efficient modern torpedo-boats.

Medical Services.—The section of the Report which deals with the Medical Services concerns itself chiefly with the Volunteer and Red Cross Societies of different nations, and those organised in Germany naturally take the first place. It was thanks to their practical and long-tried organisation and experience that the first German Field Hospital was able shortly after the outbreak of the Boer War to take its place in November, 1899, with that of Holland behind the fighting forces of the Burgher Army. A second followed in December, a third left Naples in March, 1900, for Lorenzo Marques.

By the middle of March, a Station Hospital of 75 beds was established in the Orange Free State. The German Field Hospital had been so well organised and worked at Paardeberg, that it drew forth from Lord Roberts a warm encomium on its excellent arrangements and the zeal and impartiality with which its staff of doctors, nurses, and attendants alleviated the sufferings of the wounded of both sides.

The French nation sent 4 Field Hospitals, 2 for the Boers and 2 for the British Forces, it being the strict condition of their humane mission that aid was to be afforded impartially to both belligerents.

From England, thanks to the liberality of its citizens in all parts of the country, the Princess of Wales was enabled to fit out a Hospital Ship as a reserve to the General Hospitals. The St. John's Ambulance Association gave much assistance by their reserve of surgeons and trained attendants, and the reserve of Army nursing-sisters sent out 40 nurses for distribution among the several Field Hospitals. Hospital Trains were organised, of which 2 were sent to Natal.*

* It is strange that no mention is made of the English Red Cross Society, so long established, and so ably presided over by the late Lord Wantage, V.C.—TRANSLATOR.

In Russia, the Empress herself personally superintended all the preparations and arrangements. The Russian Red Cross Society gave 100,000 roubles (about £16,000) at once in aid of these, and a Field Hospital, which could provide for about 50 wounded at a time, was despatched to the seat of war.

Italy, Spain, Switzerland, and even South America, all lent their aid.

Military Literature of the Year.—Besides various German, Austrian, French, and Italian articles in military newspapers, periodicals, etc., which are brought to notice in the Report, the following are some of the principal brochures and military books mentioned; but, owing to the amount of other matter, the notices are even briefer than usual.

VON MIRNS: *Guide to the Cavalry Soldier.* 25th Edition. Edited by General VON PELET-NARBONNE. Mittler.

Lessons from the South African War as regards the Breeding and Training of Horses, from No. 71 *Militär-Wochenblatt*, 1900.

Experiences and Lessons from the South African War. Streffleur. March, 1900.

ROHNE: *The Tactics of Field Artillery.* 2nd Edition. Mittler, 1900.

„ *The Effect of the New French Field Gun.* Mittler, 1900.

RUSSIAN STAFF: *Artillery under Infantry Fire.* Rules for Conduct of. Streffleur.

STAVENHAGEN: *Principles of Fortification.* 3rd Edition. Mittler, 1900.

A. PRASCH: *Wireless Telegraphy, 1900.* Stuttgart, Enke.

VON LETTOW: *The Wars of 1800-7.* 2nd Edition. Berlin, 1900.

H. HOUSSAYE: *Waterloo, 1900.*

L. NAVEZ: *Les Belges à Waterloo.* Brussels, 1900.

VON VERDY DU VERNONIS: *At Army Headquarters III. The Army of the Crown Prince in 1866.* Berlin, 1900.

KUNZ: *Kriegsgeschichtliche Beispiele.* (Examples from War.) Berlin, 1900.

L. D. VERME: *The Boer War.* Rome, 1900.

VON ESTORFF: *The Boer War in South Africa.* Berlin, 1900.

VON FRANÇOIS: *Lessons for the German Army from the South African War.* Berlin, 1900.

G. DE L'AIN: *Military Life of General Foy.* Paris, 1900.

DE LA FOYE: *Memoir of General de l'Adminault.* Paris, 1900.

VERESCHALGEN: *Skobelew in the Turkish and Turkoman Wars.* (Translation.) Berlin, 1900.

ZANELLI: *Chanzy, P. Fred Charles, and Skobelew.* Rome, 1900.

VON EBERSTEIN: *Experiences with Count Moltke from 1864 to 1871.* Leipzig, 1900.

Lieut.-Colonel DE PHILIP: *The Staff Service in the Wars of the First Empire.* Paris, 1900.

It would be impossible to do more than extract from the list a few such as above. Numerous regimental histories of German and French

Regiments have been published in the period, and several other works touching on the Military History of different periods, which there is no space to mention here.

PART III.

MILITARY HISTORY OF THE YEAR.

The first few pages of this part of the Report are taken up by accounts of the doings of the German Colonial troops in East and South-West Africa, the Cameroons, and New Guinea, the occupation of Samoa and Kiau-Chou. These troops are on the whole considered to have done well. It is hinted that a large increase of this Colonial Army will be necessary, and that an increase of the German naval squadrons in foreign waters is required.

A long account is given of the China War and "Boxer" Rebellion, which we have not space to reproduce. It is interesting and accompanied by good sketch-maps. The narrative, which is given without criticism, is carried down to the arrival of Count Waldersee to command on 27th September.

The Boer War.—An account is given of the war in South Africa, from the further operations of Sir Redvers Buller after the attempted passage of the Tugela, and the arrival of Lord Roberts at Cape Town to take supreme command, to the home-coming of the latter and the assumption of the chief command by Lord Kitchener, as well as some of the events of December, 1900.

It is unnecessary to detail the chief points of the war that the writer dwells on, as many accounts of the war from foreign sources have already appeared in the JOURNAL, and this one does not seem to bring to light any new views of these events worth noticing.* The writer is, as previously remarked, apparently strongly prejudiced against the British, and any criticisms he makes are seemingly based on the Boer accounts of events to which he invites credit. Perhaps the writer is not sufficiently acquainted with the English language to study the British accounts. At all events, the frequent occurrence of the titles "Sir Chermiside," "Sir Warren," "Sir Buller," and above all "Sir Roberts" (p. 568), would seem to give colour to the guess thus hazarded. The last calls to mind some of the old French farces, but one would hardly expect it in a scientific periodical conducted by highly-educated German officers. The actual narrative of events is fairly given in many cases, but the British mistakes, of which we are all well aware and which we do not wish to minimise, are generally exaggerated. The action of Dalmanutha (Bergendaal) is meagrely described, and, as this was at all events a well-planned and conducted affair on the part of the British, it would have

*A translation of another German account similar in character, from the *Jahrbücher*, is now running in the JOURNAL. It is not as yet very instructive, except as showing how ill-informed and prejudiced even military writers of a friendly nation can be.—TRANSLATOR.

Even fairer to have said a little more about it when so much is made of minor British disasters, and the few Boer mishaps are always accounted for. An account taken from a Rotterdam paper, which ridicules Lord Roberts' official despatches, is quoted with some gusto, and the Report concludes its narrative of the war down to December by saying that not only were 200,000 British soldiers in the country unable to overcome 20,000 Boers, but could not even defend their own territories, as the Cape Colony was over and over again invaded by Boers. The Report most unworthily accuses Lord Roberts of making war on women and children.

The Turko-Grecian Campaign, 1897.—This somewhat belated narrative of the war in Thessalia in 1897 is an excellent *résumé* of the operations, taken chiefly from Baron von der Goltz's valuable account from the Turkish side, but also after comparison with the reports of French, Austrian, and Swiss staff officers from the Greek point of view.

The conclusion drawn from these several sources is that though this trial of the Turkish Army brought to light certain weak points, these could easily be remedied so as to make it a valuable ally or a formidable foe in a European war, while the Greek forces required thorough re-organisation, especially as regards its officers, who must be freed from all political bias and brought to a higher sense of duty and of military subordination.

OBITUARY NOTICES, 1899-1900.

In the long roll of distinguished soldiers who finished their earthly career in 1900, and of whom the Report gives short biographies, the name of Field-Marshal Count Blumenthal stands out conspicuous. The son of a captain of Dragoons, who died of his wounds in 1813, he entered the Service in 1827, and served in the Schleswig campaigns of 1849 and 1864, under Prince Friedrich-Karl. In Bohemia in 1866, where he was Chief of the Staff to Prince Friedrich-Wilhelm, the Crown Prince. Again in 1870 he filled a similar position to this Prince, who held the command of the III. Army all through its victorious career. An officer of scientific attainments and ripe military experience, he was well known and much beloved for his simple, genial, and unpretentious manners. He preserved his active habits and brilliant faculties to the last. He died about Christmas, 1900, at the age of 90.

Short notices of the Russian General and Field-Marshal Gurko and of Prince Imeritinski are given, as well as of their old opponent Ghazi Osman Pascha. Appreciative biographies of General von Tresckow, who died at the age of 82 and was highly distinguished in the Franco-German War; and of his younger comrade, Graf Yorck von Wartenburg, a grandson of Field-Marshal Count Yorck, the comrade of Blücher in 1813-14. A brilliant writer himself, he was well known to students of military history by his "Napoleon as a General," and his untimely death in China is much regretted.

The deaths of Field-Marshal Sir Donald Stewart and of Sir William Lockhart are noticed briefly, and sympathetic place is given to that of the late French Colonel de Villebois-Marcuil, who fell on the Boerside near Boshof. A longer notice is given to General Piet Joubert, the Boer Commander, who is, however, blamed for his method of conducting the campaign, which General Louis Botha, his successor in the command, has materially altered; and of the Spanish Field-Marshal Campos, who acquired notoriety in connection with his chief command in Cuba in 1878. He was again sent out in 1894 to try and end the war, then supported by America, but he was 63 years old, and his efforts failed. He soon resigned his appointment. He had been President of the Senate in 1891. He died in September, 1900, aged 69.

Room is found to mention Gustave Cluseret, who died in August, 1900, aged 77. He was educated at St. Cyr and entered the Service in 1843 as a sub-lieutenant in an Infantry regiment commanded by his father. He served in Algeria and in the War of Secession in America under McLellan. He joined the Fenian cause, and brought himself into public notice by his conduct in the Franco-German War, where he commanded a regiment of Franc-tireurs and was one of the chief leaders of the Commune. He was taken prisoner, but escaped to England, where he was condemned for treason as a Fenian, but let go. Then he served on the Turkish side in the Russo-Turkish War of 1877.